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Datapoint to buy TRW network

BY 1983 distributed processing systems manufacturer Datapoint will directly own and control a substantial marketing force in Europe. The company has agreed in principle with TRW, its major distributor outside the US, to buy TRW's network of ten country distributors, seven of which are in Europe.

In addition, Datapoint expects to complete its acquisition of a number of other companies in the key-to-disc supplier's substantial marketing and support operations in Europe. The TRW master distributorship, which the engineering giant acquired in 1970 when Datapoint was a much smaller company, expires in 1983 and the deal transferring control to Datapoint is expected to be completed by July 1981.

'US and Japanese must bring R&D as well as production into Europe'

A CALL for EEC countries to agree on a policy that will save Europe from becoming a low skill manufacturing area for high technology US and Japanese firms has been made in a study document prepared by a committee of Strasbourg MPs on the social and industrial impact of microelectronics.

The committee was set up by the European Democratic Group which is made up of Conservative MPs from the UK and Denmark and is chaired by Sir Jack Stewart-Clark, EEC Member for Sussex East and former managing director of Tyne Cambrige, the Philips subsidiary.

Sir Jack told Computer Weekly:

"The Japanese and Americans must bring research and development work into the EEC as well as production, and the Community should present a common front in demanding this. Otherwise the non-EEC firm will go to the weakest EEC country that needs a factory simply to provide jobs."

The study urges public bodies in Europe like PTIs to co-operate in developing EEC-wide standards in areas like digital telephone exchanges, electronic mail and videodata systems so that the fragmented European telecommunications industry would be in a stronger position to compete with outsiders.

Sir Jack pointed out that the

Japanese telecoms industry was dominant in its own country mainly because of the high degree of standardisation there and not because it was protected by import controls.

Sir Jack is unenthusiastic about the value of import controls and believes that EEC countries should respect the rules laid down by GATT and by the EEC open tender policy that comes into force on January 1 next year.

He is not ready fully to support calls for EEC-wide protectionism such as that made by Andrew Bowden, Tory MP for Brighton Kempston, after Chubb Cash killed its electronic cash register manufacturing operation in Brighton in the face of enormous Japanese competition (CW, September 25).

Govt urged to promote computers in business

THE government must make much greater efforts to promote the use of computers in business, public administration and information services if the UK economy is not to lose out seriously to foreign competition. That is the main theme of the latest report from the Advisory Council for Applied Research and Development.

The report's recommendation that responsibility for information technology should be brought together in one place in the government has already resulted in the reorganisation of the Department of Industry (CW, September 25). A further step has been taken by the Cabinet Office which has set up a senior committee under the chairmanship of Roy Croft, a deputy secretary, to co-ordinate responsibility across the government for information technology. The committee is starting work this week.

Sir Robert Clayton of GEC, chairman of the working group which produced the report, compared the UK government unfavourably with the French administration, which had been vigorously

Sir Jack commented, "I am not a protectionist by nature. I am in favour of free trade. What I deplore is the way that the UK and France, for example, developed competing videodata systems instead of co-operating."

"Import controls imposed by member countries individually are pointless because the non-EEC manufacturer can still get in by setting up a factory in another EEC country."

Sir Jack admits that European co-operation in the computer area has been extremely unsuccessful to date and described the ill-fated Unidata venture as "a ghastly experience." Unidata was supposed to bring together the computer operations of Siemens, CII of France and Philips.

promoting the significance of computing to the public with an "awareness" week, plans for on-line telephone directories, and funding for micros in schools. Here, Clayton said, there had been far too much attention placed by ministers on "the chip", and not enough on practical applications.

Steve Shirley of F International, another member of the working group, said they were concerned not about new technology but about that which is available now but is not being used because of complacent attitudes.

The report recommends that British Telecom should have "a mandate to provide a world-class competitive UK communications network", and should not be prevented from getting private finance for this. Competition should be allowed in the provision of terminal equipment, and British Telecom should not be the approving authority for kit supplied by others.

No further government-funded R&D is advocated; rather existing work needs to be brought together, the report says.

'Law cannot deal with computer fraud'—police

THE law and rules of evidence are not always capable of dealing with computer fraud, according to Inspector Norman Collinson of the Greater Manchester Police.

Addressing delegates at the National Computing Centre's conference on computer crime, he said the Bank of England case where the judge felt unable to admit a computer printout as evidence.

Frank Hooper, president-elect of the British Computer Society, said DP managers would have to pay far more attention to the security of their systems.

He told the delegates they were unlikely to get security from "packages dreamt up by someone for somebody else's application," or what was intended as a panacea for 20,000 other business applications.

Hooper accused analysts and programmers of exercises in technical self-gratification, and said they designed systems as an outlet for their creative impulses.

"I see no room for creativity in DP. The work must be done according to specific rules and specific standards. There is no room for artists when you need artisans, no room for virtuosos when you need players," he said.

New UK Cobol for US Govt

THE United States Library of Congress has bought a British product, the Alpha Cobol compiler, after hearing of it through a newsletter in the US.

"They just rang us up and ordered it," said Alpha Cobol's author, Tony Sale.

Alpha Cobol was released in July by Computer Applications Research, which claims it as the first micro Cobol "compiler compiler". The system accepts Cobol Meta language in machine readable form and the compiler produces code for a pseudo machine, which is then interpreted at run time.

At present it runs on the Alpha Microsystem (on which it is said to compile at 400 lines per minute).

The Alpha Microsystem is based on an enhanced version of the Western Digital LSI-11 chip set.

The product was developed commercially in competition with the other versions of Cobol for micros that are currently available: Zilog's for Z80s, MicroSoft's Cobol 80, and the two British contenders, MicroFocus' CIS Cobol and CAP-CP's MicroCobol.

Sale thinks that Alpha Cobol has the advantage over MicroCobol of being 1974 ANSI standard, and against the standard CIS Cobol has the further perk of being a multi-user system.

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NEWS IN BRIEF

Takeover at the top

CHAIRMAN and chief executive-elect at Burroughs, Michael Blumenthal, is taking over the latter post three months early. The present incumbent, Paul Mirabito, who was to have kept both posts until the end of the year will retain only the chairmanship.

Former US Treasury Secretary Blumenthal has been doing a detailed examination of the company's management structure, and substantial changes are expected to follow his elevation, with more decentralisation.

Burroughs reported its first year-on-year profit decline for 17 years in the April-June quarter.

French buy

FIRST sale of the Micro Focus CIS Cobol compiler to run on a minicomputer has been made to CMC France. The data entry and business systems specialist, owned by Redifusion of the UK, wants to run on the CMC 7600 data entry and local processing system, which is built around the Digital Equipment PDP-11/34.

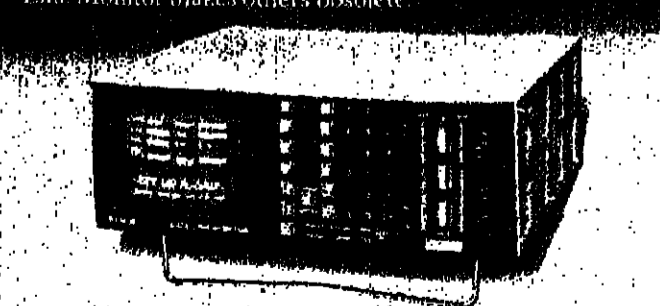
Training body

FOLLOWING talks between the Manpower Services Commission and the Computing Services Association, it is likely that any industry training body will be a voluntary council rather than a statutory training board. The latter would involve service companies and DP departments paying compulsory levies to the board.

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Briefing

Cray chief steps down

SEYMOUR Cray, founder of Cray Research, is stepping down as chief executive of his firm to devote more time to research. He will be succeeded by John Rollwagen, the company's existing president. Cray will remain chairman of the Cray Research board and of the company's executive committee.

In another move, Cray Research is increasing its authorised shares from 10 million to 30 million with the aim of stabilising the public market for them. At the present time they are moving roughly between \$80 and \$90 in value while in future they should trade at between \$25 and \$30.

Net standards bid

XEROX, Digital Equipment and Intel have completed their specification for local area networking based on Xerox's Ethernet, and are to put up proposals for an international local area networking standard to the US IEEE this month (CW, September 25). Ethernet is the highway for the Xerox integrated office products and is to be launched in Europe shortly.

32-bit Level 6?

AS well as following Texas Instruments, Data General and Philips by putting its Level 6 minicomputer onto a chip (CW, June 26) Honeywell is reported to be working on a 32-bit version. Other new models and new software are also expected in a major facelift for the line due shortly.

Test marketing

NIXDORF has begun test marketing its IBM-compatible 8890 processor, built under licence from Elbit of Israel. In the US, Two models, competing with the 4331-1 and 4331-2 are offered there and the company says it will manufacture the 8890 in the US as well as in West Germany when volumes justify it.

CHARLES SCATCHARD, organiser of Honeywell's new evening course "Computer and Logic Appreciation for Secondary Schools", known as Glass, demonstrates use of the VDU to a London sixth-former. Class has been heavily over-subscribed despite doubling the original number of 20 students, and there is now a further waiting list of 40. The project is part of Honeywell's effort to take part in local West London affairs, and all instructors are giving their time completely voluntarily.

Report - Page 3.

SESA teams up with Honeywell in US

FOLLOWING the formation of a joint company with CII-Honeywell Bull in France last year to bid for a complex computer system contracts, SESA has now teamed up with Honeywell in the US - but the two partnerships are purely coincidental.

"Honeywell and SESA Inc each identified the other as an appropriate partner, and each contacted the other separately during the summer," a Honeywell spokeswoman in Minneapolis told Computer Weekly.

SESA was the prime contractor for both the French Transpac and the European Euronet packet networks and is now marketing packet-switching technology in the US under the name DPS 25.

Where minicomputers are required in contracts, Honeywell's Level 6 will be used, and Honeywell's own networking architecture DSA is due for US launch.

The French venture with CII-HB has still to land its first contract, although it is working on several, but two substantial contracts have been won by SESA-Honeywell Communications Inc already. One involves a major New York bank and the other an international record carrier. The principal US record carriers are RCA, ITT and WUI.

SESA has 51% of SESA-Honeywell Communications, and Honeywell the rest.

SESA formed its UK subsidiary on April 1, and is concentrating primarily on packet-switching applications and those which require the continuous operation provided by Tandem's NonStop 16 computers, which have already brought SESA-Deutschland big business.

Should computer-based services be hooked up so far, mostly for research work on packet switching, but 137 have asked for connections within the trial service period, 117 of them for X25 packet transmission and 20 for character terminal connections.

First connections include ICL at Letchworth, South West Universities Regional Computer Centre at Bristol and Hatfield Polytechnic. In a three-hour test last week ICL

Other charges associated with the use of PSS from character terminals will be £25 for a network user identity number, £5 a quarter standing charge, 65p an hour for connection to a packet switching exchange via a packet assembler/disassembler, 3p for each 64K bytes transmitted and the phone call to the nearest packet switching exchange.

Only a handful of organisations are hooked up so far, mostly for research work on packet switching, but 137 have asked for connections within the trial service period, 117 of them for X25 packet transmission and 20 for character terminal connections.

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Telecom trials start for PSS

BRITISH Telecom's Packet Switched Service has gone pre-operational - which means it is now available free of charge between London, Reading and Bristol. The plan is to build up gradually to a nine-node service with a total of 400 ports by "early next year".

A spokesman characterised PSS as offering "a whole new range of marketing possibilities which it is up to the industry to supply." He added that British Telecom is considering licensing a private company to offer a mailbox service on it.

The Data Mail mailbox service started last month by Service 800 is not covered by the monopoly because it is based in Switzerland and accessed via the public telephone network. PSS itself was originally due to start in March.

Other "value added" services which will be permitted on PSS include electronic funds transfer, online credit verification and information retrieval.

Bristol Telecom is "not convinced there is a huge army of personal computer users that will want to connect to the service", although its philosophy is that it does not want to impede progress in the computing field.

However, the two US packet network-based information services for personal computer users Compuserve and the Source, are being mass-marketed and each has as many users as Prestel (over 5,000).

By far the cheapest way to access the new network is via an acoustic coupler and British Telecom has approved their use with personal computers since the beginning of the year. They are also permitted attachments on PSS. The cheapest approved for use on the telephone network is believed to be the £160 300bps Minimodem from Modular Technology of Watford, Herts.

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Royal start to IFIP 80

PROFESSOR Frank Sumner of Manchester University and Crown Prince Akihito of Japan both took the rostrum at the opening ceremony for the Eighth World Computer Congress, IFIP 80, this week, writes Keith Jones in Tokyo.

Prince Akihito talked of the world entering the information-oriented era, and said that the Congress in Tokyo and Melbourne - next week's venue - would give great stimulation to those concerned with computer science and information processing in both host countries and in the neighbouring areas.

VSPC change

THE IBM Virtual Storage Personal Computing system, VSPC, is to become an MVS-only product. The DOS and OS/VS1 versions are to be dropped. This became clear at a meeting in Norway last week of the Share European Association, SEAS, IBM user group.

The aim is to make VSPC two to four times better in price-performance terms than TSO, with CPU costs equal to those of VM/CMS, and it is thought that only by concentrating on the MVS version can more powerful facilities be developed.

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COMPUTER WEEKLY

Vol. 29 No. 727
Thursday, October 9, 1980

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New York, NY 10017
Tel: (01) 212 867 7000

Published weekly on Thursdays.

Registered at the Post Office as a
newspaper. Price per copy 25p

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Computer Weekly has a circulation each week of over 90,000 including the highest fully requested circulation in the UK.

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Controlled circulation department: IPC Business Press (UK) and Distribution Ltd, 100, Strand, London WC2R 0JH. Tel: 01-673 3333. Subscriptions (one year) for readers: UK £10, Eire £12, USA and Canada £18, USA and Canada £20, USA and Canada £22, USA and Canada £24, USA and Canada £26, USA and Canada £28, USA and Canada £30, USA and Canada £32, USA and Canada £34, USA and Canada £36, USA and Canada £38, USA and Canada £40, USA and Canada £42, USA and Canada £44, USA and Canada £46, USA and Canada £48, USA and Canada £50, USA and Canada £52, USA and Canada £54, USA and Canada £56, USA and Canada £58, USA and Canada £60, USA and Canada £62, USA and Canada £64, USA and Canada £66, USA and Canada £68, USA and Canada £70, USA and Canada £72, USA and Canada £74, USA and Canada £76, USA and Canada £78, USA and Canada £80, USA and Canada £82, USA and Canada £84, USA and Canada £86, USA and Canada £88, USA and Canada £90, USA and Canada £92, USA and Canada £94, USA and Canada £96, USA and Canada £98, USA and Canada £100.

ISSN 0010-4787

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by D. R. Breakwell of Barrow-in-Furness, who wins £5.

A shopping trip to Barrow's Asda hypermarket has taken on an aura of science fiction since the introduction of five electronic tills this week. Mail Man found the blurring and buzzing of putting a tin in the mannequin's overladen trolley between the cash desks. His concentration quite went as he fumbled with his till. The staff obviously feel the same. "I don't know if I'm in the intensive care unit or Dr Who's Tardis," said one.

Said another: "They bleed all the time and give you a bloody headache, but I suppose we'll get used to them."

Mail man was intrigued as to whether the tills actually fulfil some useful purpose, but he didn't know any. Perhaps computers just aren't capable of thinking quickly.

North Western Evening Mail

COMPUTERVIEW

IFIP this week has been the biggest international computer gathering ever to take place in Tokyo, and following the show it is likely that thousands of informaticians who made the trip for the first time will decide that they have to add Japan to their regular itinerary.

So far, Japan has no annual international computer show which demands to be added to the international circuit that presently embraces the NCC in the US, Hannover, Sicob, and Compec at Olympia.

The reason is not difficult to find: computer industry trade is largely a one-way traffic out of Japan and into the rest of the world. Until very recently, only IBM had a wholly-owned subsidiary in Japan; it was one of those strange arrangements akin to the one whereby ITT had a subsidiary in West Germany throughout World War Two. But any other US manufacturer had to form a joint venture with a Japanese company.

US companies provided the licences which got the Japanese mainframe industry off the ground. Hitachi got RCA Spectra licences, Toshiba went to GE, Nippon Electric to Honeywell, and Mitsubishi to Scientific Data Systems, which became

Japanese traffic is still one-way

Xerox. Only Fujitsu developed an original Japanese line of mainframes.

In the past two or three years, US companies like Data General and Burroughs have taken advantage of a relaxation of Japanese policy to buy their Japanese partners out of the joint ventures, and Honeywell has stepped up its direct marketing in Japan.

With the announcement of the Acos 77/1000, Nippon Electric has unequivocally declared the pre-eminence of Japanese large-scale mainframe manufacture: the specification of the machine makes it as powerful as anything IBM is likely to produce in the H-series, and all the evidence of Fujitsu's and Hitachi's IBM-compatible M-200 machines is that they are far from being paper tigers: they work to specification and are substantially more reliable than anything coming out of the US industry.

Yet the Acos 1000 is not IBM-compatible: it is developed from the Honeywell Level 66 licence, and it retains substantial compatibility with the GCOS 66 and GCOS 8 operating systems. All that the Japanese are still missing is an intimate knowledge of US and

European applications software requirements - and there are plenty of British, French and US software companies more than ready to provide that expertise under subcontract.

The lack of Western software expertise is Japan's one remaining substantial weakness and it represents Europe's last chance to protect its battered computer industry from a Japanese wipe-out on the scale of consumer electronics, motor cycles and cars.

But it is vital that every substantial move into the European computer market be matched by a comparable European entry into Japan.

The will to invest...

BETTER late than never, British Telecom's Packet-Switched Service has begun limited operation from nodes in London, Reading and Bristol. It would be very British to treat it not as a great new opportunity but simply as another service.

Spurred by the full operation of Transpac and Euronet, and in the belief that information is power, the French government is giving financial backing to companies de-

veloping public access database services which can be sold around the world.

The UK remains one of the biggest repositories of human knowledge in the world, and PSS coupled with the International PSI provides the highway over which to disseminate that knowledge. The product, the distribution medium and the market are all there. All that is in doubt is the will to invest.

Years ahead of the Tandy and Pet

I DO not wish to enter the argument (CW, September 4 and 25) about the relative merits of the Tandy and Pet but why, in 1980, does Paul Brazier use Fortran (invented in 1958) and Basic (invented in 1966) as criteria for judging machines in an educational context?

Fortran and Basic represent an old tradition epitomised by GOTO statements and flowcharts. Because of the unsatisfactory nature of this tradition Pascal (1970) was invented, and Pascal (1975) combined the sound structures of Pascal with the simple syntax and easy operating environment of Basic.

I accept Paul Brazier's implication that the differences in software are more critical just now than differences in hardware, and on that basis the two Danish machines SMP-1 and RC Pascal, because they have Pascal and Pascal-M, are literally years ahead of both Tandy and Pet machines.

ROY ATHERTON
Bulmershe College,
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Jobless graduates

PERHAPS employers, instead of spending thousands of pounds in vain attempts to poach exper-

enced programmers from other sites, or moving operators who already have a job, up into programming (George Fenney, September 18), might consider employing university graduates like myself, who don't have a job, but who want to be given the chance to prove that two years' commercial experience is not absolutely necessary in order to do a satisfactory job.

ROSEMARY SHARPLES
East Sheen,
London SW14

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

Insac tries to make mark in US

By Claire Gooding

FIRST the good news: British software is represented at the world's first show for packaged software. The bad news: Insac's stand was undoubtedly the barest there.

Full marks to Insac for being at Software Info, held in Chicago, at all. And a credit to them for getting American salesmen to sell British software. But they were

obviously in need of a US-sized budget to do the job.

Already handicapped with a new name which means nothing in the US, Insac's salesmen are also battling against typical British reticence when it comes to spending on advertising. "We've got software here as good as anything else on show today," said an Insac salesman. "Everybody you speak

to knows the name Altergo, for its TP monitor Shadow, but Insac doesn't mean anything here - and it won't unless we can advertise."

All this is about to change however, and Insac's very presence at Software Info is a good sign for the future. Insac has just revealed that it is about to start an aggressive campaign to get its name known and market its products in what president Peter Dine termed "a second British invasion of America".

Following the purchase of Altergo Inc in the US and the California-based Global Data Corp, the group is pursuing plans to get a foothold in the minicomputer software market through Insac Products Inc.

Insac is about to change its advertising agency and spend more on catching the eye of US buyers. And next year, Insac salesmen won't be fighting to get a carpet on their stand at Software Info. "Next year," said one of them, "we'll take this exhibition as seriously as it deserves to be taken."

303X price cuts on the cards

PRICE manipulation by IBM in order to maximise its revenues before the launch of the H Series could involve more than the rental increases of around 8% on 303X machines just made by the company. Some IBM watchers in the US believe that IBM will also cut purchase prices on 303X machines in order to overcome the sales resistance of customers who think that H is just around the corner.

In addition, a cut in 3031 prices is also seen as necessary to sustain sales after the launch of the price performance competitive 4341-2.

New York industry analyst, Gideon Gartner, believes that 303X price cuts could also be needed to

ward off the threat from plug-compatible suppliers, notably Amdahl and National Advanced Systems. Gartner also thinks that IBM will take advantage of increased profitability in the fourth quarter of this year to take a temporary cut in its sales revenue.

In the UK, the 303X machines and all 4300 models are excluded from a broad range of price increases. Purchase prices of most products launched before January 1980 are up 5%, while rentals and licensed programs go up 8%. Maintenance charges are adjusted over a spread of -5% to +10%, and other services rise between 15% and 25%.

CSA group slams ICL

ICL's attitude to providing spares to third party maintenance companies was heavily criticised at a meeting on October 2 of the Computing Services Association's independent maintenance group.

Some group members described as "nonsense" ICL's insistence that it sometimes needs up to 12 months to produce spares for third party firms. The point was made that ICL should be catering for the spares requirements of all its machines in the field, including those serviced by independent companies.

One member said that his company went directly to Control Data and other firms which supplied ICL with hardware because ICL

had been so troublesome when his firm was getting off the ground.

To illustrate the dramatic contrast between the ICL attitude and IBM's policy towards third party firms, one member pointed out that if only one item of a particular part was left in IBM's stores the third party engineer would get it if he arrived before one of IBM's own engineers.

The meeting was attended by computer users from all over the country interested in the services offered by third party firms, and they were told that the total value of UK business generated by third party companies was likely to increase from £15 million a year to £50 million in four years.

Tandem goes European

REFLECTING the company's rapid growth in Europe, Tandem has re-organised its operations, forming a North-West Europe regional division under Jack Chappman, who is elevated from the post of UK managing director. The new group embraces the UK, Sandania, Holland and France. A regional support team is being set up to provide back-up for the

national operations on the applications front. John Louth, who joined Tandem two years ago after 14 years with Burroughs, takes over as UK managing director.

Tandem closed its books on fiscal 1980 at the end of last month, and expects to report turnover almost doubled to some \$105 million. Target for fiscal 1981 is \$200 million.

£199 impact printer

FOR a price of £199 plus VAT microcomputer systems builders can now buy what is claimed to be the first impact matrix printer in the world with a single needle head. Built in Japan by Seikosha, part of the Seiko empire, the 30 cps 80-column printer has been launched in the UK by distributors Mitrecrest of Basingstoke.

Uni-hammer can generate graphics as well as forming the full 128 ASCII character set from a 7 x 5 matrix. Up to three copies can be printed. Mitrecrest points out that Uni-hammer weighs only 2.5 kilograms and comes with a Centronics interface as standard. The single needle head is controlled by PROM-based software.

PSS trials start

From front page: exchanged about 2,000 packets between its 7500 system and a British Telecom terminal.

First applications are expected to be the exchange of messages and text files between co-operating organisations, and the first commercial services are expected to be information retrieval, although the UK's two major database services use bitnet, which already have their own networks in place. They are expected to make use of PSS as it builds up, and the manager of one of them, Infoline, said he thought PSS would help his service to expand.

Logica has been chosen by British Telecom to investigate ways of supporting a variety of business services such as facsimile transmission, telex and Prestel on any one of the networks as an alternative to using PSS. A contract to design a specific gateway device is then likely to be placed.

Pupils flock to Honeywell course

OTHELLO and Space Invaders are two of the games being used as teaching aids in Honeywell's new evening course in Computer and Logic Appreciation for Secondary Schools (CW, Sept 4).

At the first evening of Class on October 1, project organiser Charles Scatchard was extremely pleased at the response. "We originally aimed at one class of 20 students, but have had to double this to run two classes in tandem, and there is still a waiting list of 40."

He added that this was especially encouraging for the instructors as they were giving their time completely voluntarily, as part of Honeywell's effort to become involved in local affairs.

David Youens, director of personnel, made the same point in his opening address. "We have no ulterior motive in offering Class," he said, and added, "Sometimes it's surprisingly difficult to give away practical help - much easier to hand over a cheque to an accounts department who know just what to do with it."

Class is designed to give the more mature sixth former of local West London schools a knowledge and awareness of the DP industry, and computing as a career. It will run for one hour on Wednesday evening over the academic year, and at least half the class time will be devoted to practical machine work, on Level 6 minis.

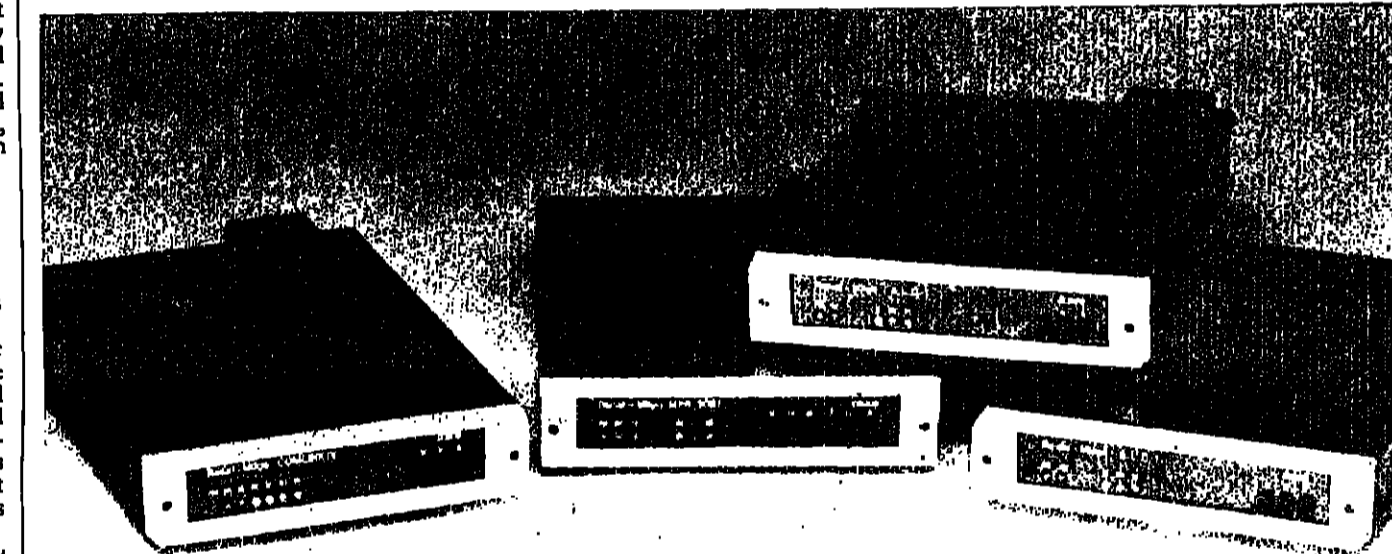
"We're fortunate," said Youens "in having most of the educational material already prepared for our commercial courses. It just needed to be broken up and re-allocated."

Selection of the students was left entirely to the individual schools, but though no previous knowledge of computing was assumed, a certain level of motivation and ability was stressed as necessary.

"You will need some stickability," said Youens.

In the 40 weeks Class will cover a multitude of topics from input and output media, through programming database systems, specification analysis, and data editing, to writing several separate programs.

The main teaching emphasis will be on Cobol and Basic, with an introduction to others such as Fortran, RPG, Coral and Assembler. Successful students will be given a certificate.



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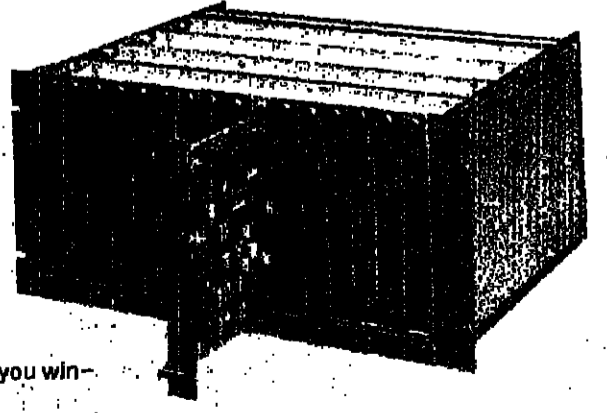
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Downtime

by Chad

This recession isn't working!

RECESSIONARY THOUGHTS: I cry, trying to ring up a computer company that has just sacked a whole lot of graduates: "Why the blazes don't these people answer the phone?"

Wilyly replies my colleague Tim Palmer: "Because they've fired the telephonist."

It turned out they had moved offices, and are not really in any danger of going out of business. By the way, you needn't imagine just because there is a recession you will be able to get your roof or your phone or your car fixed any sooner than usual.

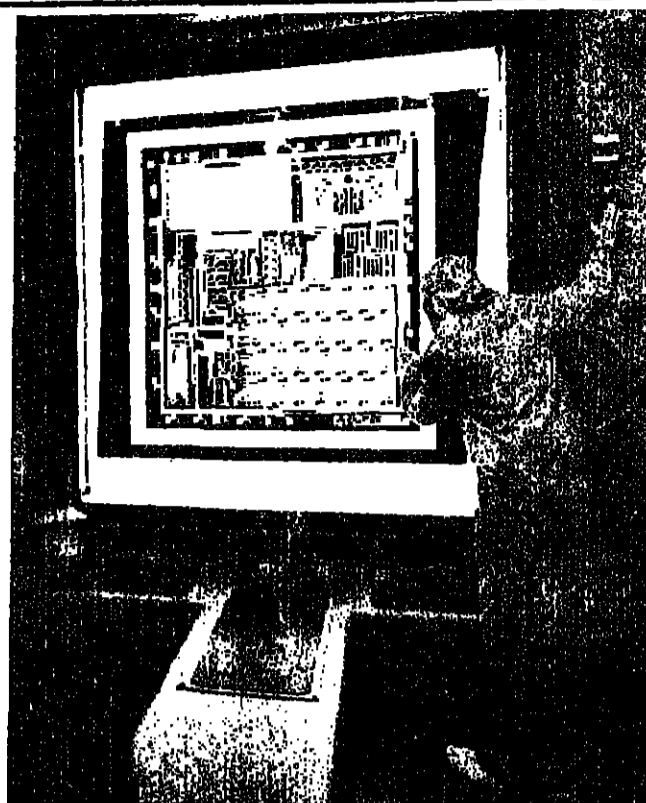
So you're offering them money? You can't expect en-

lightened non-materialistic businessmen to be interested in that!

A friend who is moving house has been told she won't be able to get a phone until late nineteenth-century-five. This is clever.

The way it works is this: in times of boom, the PO explains, "There are so many people who want phones we won't be able to get you one for yonks." Then when there's a recession they say, "The PSBR has been cut back so we won't have any money to spend on giving you a phone for yonks."

Of course they won't cut back on exhorting you to buy a phone.



I suppose it was inevitable that sooner or later Ken Russell would make a film about microchips.

I-told-you-so department

CIAD is smirking all the way round to the back of his head this week, following last week's Downtime piece about so-called spelling checkers on word processors. Some friends at the Polytechnic of Central London have sent me a letter they have

received from none other than IBM, exhorting them to buy the new Displaywriter WP.

One of the most splendid features of this machine, the letter says, is the wonderful spelling checker. You'd better believe it. The one-and-a-half page letter contains no fewer than five spelling mistakes.

One of these is a valid word which the checker could not possibly find, but the others, as you can see, are words that you

Managment

would find only in a most peculiar dictionary.

For good measure the letter adds one syntax error and one punctuation error, together with an example of one of the most stragulating pieces of clumsy construction I have come across in a month of Sundays.

There is of course no automatic checker for these yet, but doubtless someone in Armonk is

heaving away to produce one, so that future letters can have five of each error instead of just one.

GILB'S MYTHODOLOGY

Make simplification into a formal goal

IN the data processing business, we are, as an international professional group, terrible at making any clear formal goal statements for any of our projects. So I should really make this suggestion in two steps:

First, have clear measurable goals before undertaking any important system development activity. Then among these clear measurable goals, should be goals which directly encourage simplification.

Let us optimistically presume that you not only are convinced of the need for clear measurable goals, but that you practice it regularly - practice it for all critical goals of the system, such as maintainability, and not just for the easy-to-measure ones, like response time.

We can now approach the additional question of how to encourage our design teams (or programmers functioning as designers) to find simplified approaches to their designs.

The fundamental reason for complex designs is what I call functional design. We are too concerned with the analysis and design activity of making sure that all necessary functions are identified and put into the system. In doing functional analysis and design we usually forget attribute design. "Getting the functions to somehow work, as early as possible" becomes the order of the day.

Risk level

Attribute considerations which might lead to several desirable types of simplification, seem to get shoved aside in the panic of the complex functional requirements planning concept of evolutionary design. The simplification concept of evolutionary design, identifying functional needs in detail at a later time, is too rarely a conscious process. We seem afraid of doing this, because we lack professional insight into how to control such an evolutionary

process.

One specific attribute which can be achieved by selection of a suitable design strategy or technology is the acceptable risk level. Obvious as this factor is, I find that it is too rarely treated directly by management and technologists who are discussing a new system design.

Go on, take a look at the systems documentation on your desk, and try to find an explicit "acceptable risk level" specification.

Try asking the project leader what it is, or ask the main user/client representative. It won't be easy.

Yet if it is specified clearly, then the designers will be motivated to find simpler solutions, because these will, by their visible nature, tend to remove some of the risk elements from the system.

In practice, a risk level can be stated as an overall system parameter: "The system shall be designed so that no attribute upon delivery deviates by more than 10% from the planned level."

Guarantee

Or it can be expressed in the form of a "worst-case" specification for each attribute. For example, planned delivery time by Jan 1, worst case by July 1. What happens if I change the worst case to be Jan 15? Obviously I have less freedom to be late. I must find a surer way of delivering the system.

This pressure to plan a low risk system might lead me to consider dealing with an outside supplier who is willing and able to guarantee things. After, even at a higher system cost. The pressure might lead you to consider getting some kind of ready-made system, rather than building the more customised version which management have now told you they are not willing to wait until July to get.

Options such as contracting with a supplier who will guarantee, or getting ready-made systems, are really simplifications. They remove the uncertainty of the less simple process of building it yourself, or letting a supplier loose without accepting a commitment to be finished near a given date.

Applying this principle of attribute specification to a different attribute in a typical data processing system can be illustrated further with User Simplification. Most of us would probably pay lip service to the goal of making things easy for the final user of the system. Yet can you find this laudable goal as a measured attribute upon delivery?



Tom Gilb is an independent consultant, lecturer and author on computing topics.

any of your systems? Have you ever had to pass an acceptance test where the learning time and productivity of the user had to meet certain levels, not just the "response time of the computer terminal"?

Try the following goal idea prototype out on your own system: No presently employed user shall need more than one day on the job to reach solo capability on the terminal, not more than three weeks to reach a productivity of 300 transactions per five hours' constant work.

Now to reach goals like this you will have to simplify the system from the point of view of the user. This may complicate the programming and design - but that is our job, so don't try to escape it by putting the burden on the user.

Goals such as the above should lead to simple mnemonic codes, natural procedures, indexes by keyword in the user handbook, online help facilities and other simplifications for the user.

Gilb's hypothesis: If management really want to achieve system simplification, then they must communicate the underlying reason in the form of a clear system attribute specification. Failure to do this will result in overcomplex systems, and this is a management failure.

TEN YEARS AGO

From Computer Weekly of October 8, 1970.

SIR JOHN WALL, chairman of ICL, signed a £250,000 contract for two System 480 computers, to go to the Ministry of Foreign Trade in Moscow. It was the first Western company to gain fully accredited status with the Russian ministry. As a result of what was believed to be the largest single computer contract ever placed in Ireland, the Dublin-based Bank of Ireland acquired 25 million worth of ICL equipment, including two 1804A processors. The computer network, BSA International, was formed in Paris by Matra International. The 2000C, a time sharing system capable of handling 32 terminals

FOCUS

Giving the DPM his due

ASSET-STRIPPING has been a way of business life for some considerable time. It now seems that the noble art of stripping has reached the computing corridors of power.

Increasingly, the vestments being discarded are those of the data processing manager. His responsibilities, power bases, authority and possible prestige are being eroded as quickly as IDPM membership.

"Power to the user" is the sales message currently being signalled to the industry. Whoever may have his finger on any future data processing button, the odds are mounting that it won't be the DPM's.

The latest "Let's knock the DPM" campaign is being promoted by the BIS, whose leader Ron Yewsey has widely spread the image of the DPM as that of a dinosaur - and a particularly backward member of that species to boot.

Cramming

The BIS is now presenting a series of courses on improving essential data processing skills. Rather surprisingly these skills do not cover such basic computing activities as cramming in an extra work shift a week, coping with work-flows when half the operating team is absent, or making do with (or mending) that old disc drive.

In fact, the role of the DPM is being undermined by the BIS which is clearly placing its fee revenues on the computer user. According to the course notes on Practical Project Management, the session is aimed at those controlling or likely to be controlling DP

projects. Apart from this one reference to DP, the reader could assume that the project manager in question involved deep sea diving, construction of Middle Eastern cold stores or Chinese take aways.

Quality

Unfortunately, at least for the course presenters and possibly ambitious non-DP managers, computing project management is far from being a matter of check-lists and objectives. Quality assurance, by tradition, figure highly on most management project courses. The random business leader would find it hard to establish firm quality assurance. The required PO telecom lines will no doubt perform adequately when they are finally delivered. The Andahl mainframe will not let the side down, providing there is no power supply failure. The PC peripherals will give a keen performance providing the interface procedures are closely controlled. The IBM printer will perform as required, providing the continuous supply of paper does not run out.

Having sorted out quality assurance, the user project leader would then have to deal with activity control. Although technical skills alone do not necessarily promote efficient project control, there is no doubt that they help. The day when the course presenters stage practical project control sessions on hydra building, nuclear power station operations or preventive medicine, all of which are marked as being suitable for the non-technical user, will indeed be notable.

In the meantime, DP project control should be left to the computer professionals. Otherwise the project could quickly find itself stranded.



Keyboard or handprint for office of the future?

IBM experts disagree about the exact form of the office of the future. The marketing staff appear to favour the alphanumeric keyboard as an acceptable device for interacting with the system. But some of the research people believe that managers will not come to terms with the keyboard and will demand some form of electronic handwriting unit.

This information was part of the mass of facts and figures picked up by the US by Roger Darlington, assistant research officer at the Post Office Engineering Union.

He has just returned from more than a month visiting US institutions, mainly in the telecommunications field, under a travelling fellowship awarded by the Winston Churchill Memorial Trust.

electronic equipment should have as low a physical profile as possible and should cater for managers who were not interested in acquiring keyboard skills.

Greenias said that a handwriting input system was under development at Yorktown Heights involving an electronic pen and writing tablet.

But Darlington gathered from the Greenias talk that the system was still very much at the conceptual stage.

Incredulous

Darlington said that the other IBM people at the presentation reacted to what Greenias had to say with incredulity and views were expressed to the effect that managers would be prepared to live with the keyboard.

IBM marketing people present at the meeting doubted if the system conceived by Greenias could ever be sold successfully.

At the moment there are systems like the Quest Automation Micropad that can recognise individual and carefully formed letters and numbers and some sophisticated OCR systems that can read handprinted alphanumeric if they are written with care. But there is no system anywhere near the marketable stage that can read the freehand writing of any individual. IBM has a system at Yorktown Heights that can recognise contin-

uous speech, but only after it has been extensively "trained" to follow the speech patterns of the individual talking to it (CW, April 17). That system was also discussed in the presentation and IBM made it clear to Darlington that it required a lot of computer power to support.

Voicebank

Darlington's tour of the US also took in Voicebank Delta, the tele-

phone answering service owned by Exon subsidiary Delphi, whose Delta 2 system is to be manufactured in the UK under licence by Nexos.

Darlington visited the first Voicebank centre which is in San Francisco and was told that the second would start operating in Los Angeles in the spring of next year.

The San Francisco centre now handles 24,000 calls a day for 4,000 customers.

Gallium arsenide nears big-scale production

GALLIUM ARSENIDE technology is on the verge of moving from the laboratory and limited production into large-scale commercial production, and is being used by Fujitsu in the development of a "super computer", according to a study by Strategic Business Services, a market research company of San Jose, California.

Entitled Impact of Gallium Arsenide on MOS, SOS and Bipolar Technologies, the study shows

that the initial penetration of GaAs will be in specialised applications such as high-speed computers, phased array radar and interfaces to fibre optic links.

High priced

The report indicates that the first products, expected to appear during the next two to three years, will not be directly competitive with existing products. They are

Currys plans 20 micro outlets by next March

COMPUTER competition in the high street is heating up, with Currys formally announcing its plans last week. The electrical goods chain has opened a microsystems subsidiary trading under the name Micro C. So far, there are seven Micro C outlets in the Currys stores, and by the end of March 1981, the company hopes to have 20.

Micro C markets a range of hardware, software and systems equipment covering a price spectrum of £450 to £14,000. Among the microcomputers on sale are the Commodore Pet, ITT 2020, Panasonic JD 800U and the Apple II.

The company sees its market divided into four segments: the hobbyist, the educational market, the first time (small business) user and the larger corporate company.

The main suppliers are Partec and Panasonic, chosen primarily for their ability to support their equipment. Hardware is guaranteed for 12 months by Currys and software is supported indefinitely.

The Currys electrical chain has a reputation as a discount store. However, Micro C's strategy is the personal touch, and it will act as a consultancy as well as a microcomputer retailer.

likely to be high priced and specialised.

As volumes increase, however, yields will improve and prices will become competitive with existing technologies. By 1985 higher speed gallium arsenide chips will impact MOS, SOS and bipolar components, says the report.

In the US, gallium arsenide VLSI projects by companies such as Rockwell, Hughes, TRW, Texas Instruments and Westinghouse are likely to get government

funding. European companies are also likely to receive government support, but research will probably overlap, the report states. The European companies include Plessey in the UK, Thompson-CSF and LRP in France, and Siemens in Germany.

In Japan the companies most actively concerned with GaAs research include Hitachi, Matsushita, Mitsubishi, Oki, NEC, NTT and Sony, as well as Fujitsu.

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OP SPOT

A job that's as safe as houses...

BUILDING societies are as safe as houses. The people who work in them are probably drawn to their jobs by an instinct for security — an instinct which will have been sharpened since "recession" came on to everyone's lips.

"Security — that's what a lot of people are looking for these days, isn't it?" says Mike Jackson. He is in charge of operations support at the Abbey National Building Society's North London installation.

He has been with the company for nine years having started as an accountant.

Stability

Heading computer operations is Alan Chappell, who has also spent most of his career within the company. A fellow of the Building Society's Institute, he is very much a company man who likes to emphasise that he and his staff work for a building society rather than a computer installation.

He says data processing departments often forget that they exist to serve a user and he points out that the users sometimes regard the computer as a parasite.

His organisation would prefer to use clerks with pencils and paper if

it was cheaper, he adds.

The stability of the operations department at Abbey National can be judged by the fact that a team of 24 operators has remained more or less intact for the past year. They are generally better paid than their counterparts in the branch offices and receive assistance on their mortgages.

They work a four-shift system seven days a week, excluding Saturday and Sunday nights. The balance on a shift is one shift leader, a pair of senior ops backed up by another two ops and a trainee.

"You must be honest," says Chappell, "when recruiting new members of staff." He has interviewed several people who have left their previous job due to unfulfilled promises. Although he sees the proliferation of new systems as providing fresh career opportunities in ops, he knows that at his site the promotion pyramid narrows rather quickly at the top.

However, Abbey National likes to hang on to its staff. "If I have to lose a talented member of staff at some time in the future," says Chappell, "I would rather he or she was lost to another area within the organisation than lost to the organisation altogether."

Selection of operators follows

four stages. A written aptitude test is taken after an initial interview with the personnel department. The third, and most important, stage is a walk around the computer room when the applicant's knowledge is pinned down. Fourthly comes the main interview.

Choosy

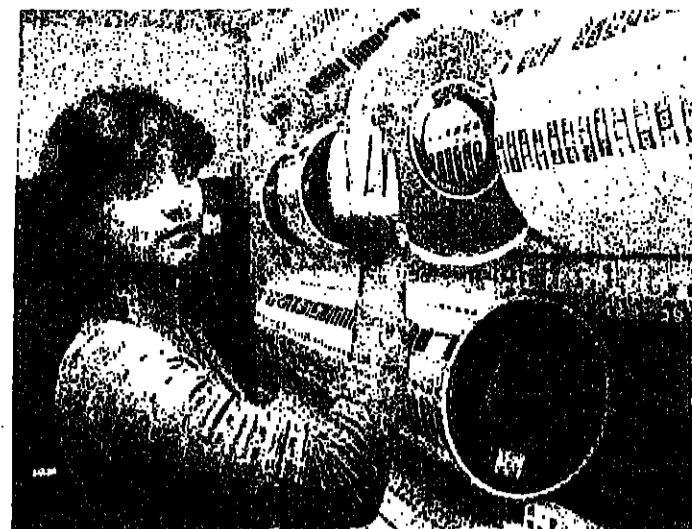
Times are getting harder, even for those who want to work with computers. When Chappell recruits, especially for trainees, he does so from a buyer's market and can afford to be choosy. He never uses contract staff.

The latest economic climate has certainly not inhibited the growth of Abbey National's fortunes. During the first six months of 1980 its assets have grown by £576 million to £7,826 million. This wealth is monitored by a Univac 1100/82 which is at the centre of a telecommunications network with links to over 600 branch offices. It handles well over a quarter of a million transactions and inquiries every day.

The present 1-megaword 1100/82 was recently upgraded from an 1100/71. Peripherals include four 8405 discs, 16 removable disc pack drives, four printers, a card reader and two consoles.

"We are exceedingly tape oriented," says Mike Jackson. That is borne out by the nearly 6,000 tapes on site holding information on the range of Abbey National's activities.

At Easter the site switched from



Uniservo 20 to Uniservo 36 tape drives. The 36 went live at the beginning of September at 6250 bits per inch for real time updating of names and addresses. The upgraded tape system quadruples storage and is intended to provide the back-up for a new network.

At present the installation has four Novas working as front-end processors but it has just taken delivery of a DCP 40 communications processor.

Of the EXEC 8 operating system Jackson says: "It's great." Along with several other operators, Jackson is working on computer aided learning packages aimed at educating ops. Op Spot will cover this within the next couple of weeks.

Write to us
HAVE you any complaints about your job? Do you feel you are well off compared with other operators, or not? Is your career path well defined, or do you seem to be in a dead end?

Op Spot would like to hear your views. Contact Paul Fisher on 01-261 8170 or write to him at Computer Weekly.

Zlath Emrith (above) has been a tape librarian at Abbey National's North London site for three months. The person she replaced is now a trainee operator, although she doubts whether she wants to move into ops. Cheryl Longmore (below) started as a tape librarian but since then has become an operator. She avoids shift work saying: "Night work wouldn't fit in with my social life. I wouldn't be able to adapt to it."



by Paul Fisher

Svengalis or Shylocks of DP?

"WHO are the contract operators?" asks Bob Butler. "Are they the Svengalis, Shylocks and cowboys of the DP world, or could they be dedicated professionals?" Butler should know the answers. He is a contract worker from the West Midlands who seems to have few delusions concerning the temporary roles he takes up.

For a start he recognises that "the client is paying out a high amount of money on a service he's desperate for. He expects the best and that is what he should receive."

"Any fool can give himself a bad name," he says, "but a good reputation has to be earned, especially now contracts are becoming harder to find."

Later

"Time and again," says Butler, "we get contractors acting as though they are God's gift to DP. It's not unusual for them to be late, after all they only have to answer to themselves."

"Even if you think they're all a load of twits," he says, "the best thing you can do is to keep that to yourself."

Diplomatic to the last, Butler points out that contractors also have a cross to bear. "Why not put the permanent staff straight by telling them the facts? There is no holiday pay for contractors, no sick pay and no taking the odd day off. And worst of all, there is the waiting for the next assignment."

MICRO NEWS

Hong Kong firm gaining on Tandy

A HONG KONG company, EACA, has got Tandy on the run with a "work-alike" to its TRS-80 Model I Level II personal computer.

The system is being marketed in the UK through distributor Lowe Electronics of Matlock under the name Video Genie, and already represents about 35% of the original Tandy market.

In order to avoid repercussions from Tandy, EACA is marketing it in the US under a different name, the PMC-80. It is likely that the PMC-80 could impose on Tandy's market share over there as much as it has done in the UK, especially when latest market share figures from the US indicate that Apple has overtaken Tandy.

Price

The PMC-80 has almost identical internal workings and layout to the TRS-80, the most obvious difference between the two being in appearance. It is a complete single unit with keyboard, cassette recorder and power supply, and any black and white TV will interface with it.

Unlike the TRS-80, further cassette storage is available on the PMC-80 via a second interface port.

Retail price in the US for the PMC-80 without a monitor is \$595; the listed price for the equivalent TRS-80 is \$849, but this includes a monitor. When the user buys a black and white monitor to go with the PMC-80, there is still at least \$100 price difference.

When it comes to peripherals, the work-alike system will take all those built for the TRS-80, but

only with a \$35 interface printed circuit board. On the back of the PMC-80 is a 50-pin bus rather than a 40-pin, which has been designed for an S100 chassis when it is developed. It is expected to be available this autumn.

The S100 chassis will allow the system to accommodate discs and all S100 peripherals. EACA plans to make the discs compatible with Tandy disc programs. The \$35 interface board is a 50-40 pin adaptor.

Apart from these differences, the PMC-80 and the TRS-80 appear to be the same. Both are Z80-based systems with 12K of ROM and 16K basic of RAM expandable up to 48K. EACA managed to purchase the same version of Microsoft Basic that is used by Tandy, so the graphics characters are the same. This means that there is complete software compatibility between the two systems.

Winner

A spokesman from one of the Video Genie dealers over here, Microdigital, which has recently been acquired by Laskys, told Computer Weekly: "The Video Genie is the ultimate in good value and has proved a real market winner. We are very enthusiastic about them going into the education market and already some of our Tandy customers are switching to Video Genies."

Microdigital has stocked the Video Genie for about three months and is selling it for £379 including VAT. This price does not include a monitor, but the Genie can be used with any black

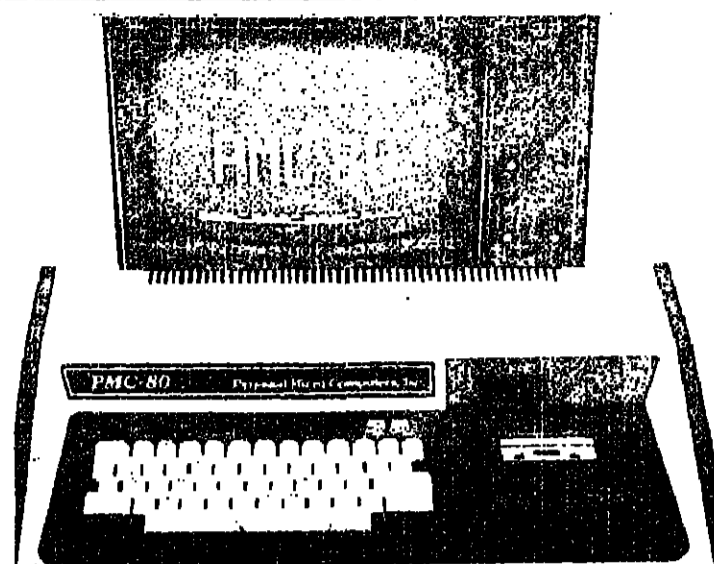
and white TV in the UK.

The PMC-80, which was on display at the personal computer stand at Wescon last month, is being distributed in the US by Personal Micro Computers based in Mountain View, California. It is offering a 90-day warranty period and a one-week delivery time.

Search

The company is introducing its own line of peripherals for both the PMC-80 and the TRS-80. The main product is a Fastload Cassette Interface System, which can search and load cassette tapes 16 times faster. This is selling in the US for \$295.

For word processing applications, PMC has designed a lower-case modification kit which is compatible with two popular word processor packages.



The TRS-80 work-alike personal computer, sold in the UK under the name Video Genie, and in the US as the PMC-80.

CMOS version of 6805

MOTOROLA has developed a CMOS version of the 6805 8-bit microprocessor family which is available in production quantities now. The MC6805B, at \$45 a piece, offers a standby power consumption of less than one milli-

Watt and a consumption at 1MHz of 20mW. Included on-chip are 112 bytes of RAM, a timer, 16 input-output port pins and the bus structure.

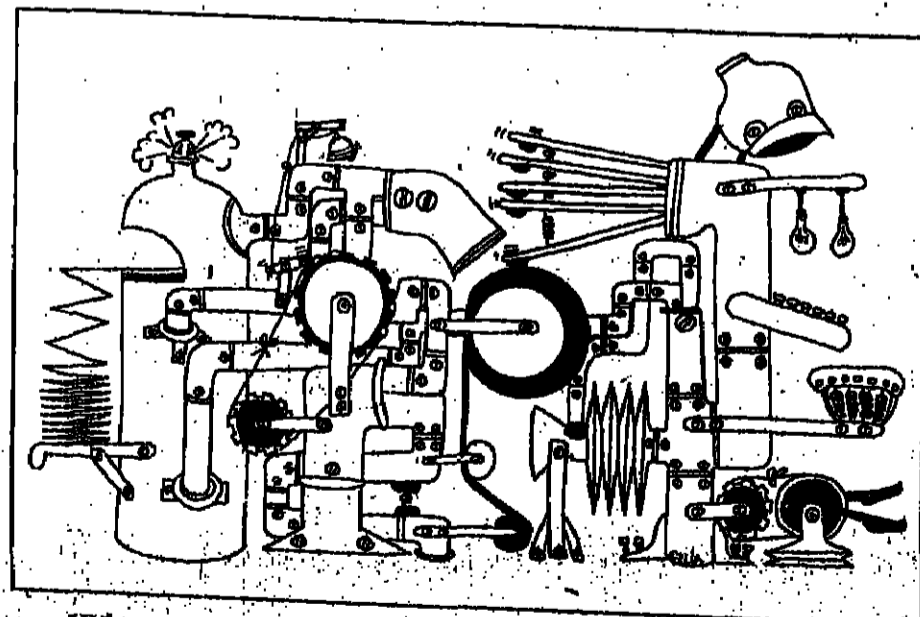
Approved Eprom in production

SAMPLE quantities of Intel's JEDEC-committee-approved 64K Eprom, Erasable Programmable Read-only Memory, the 2764, are now available at a US price of \$163 each for 100-piece purchases. Volume shipments are expected to start early next year.

A committee of the Joint Electron Device Engineering Council in the US approved the 28-pin packaged 2764 over Texas Instruments' 28-pin version because of a two-line control function and the universal pinout.

It hopes that it can increase sales of the 64K device with an aggressive marketing policy so that it will become established even without JEDEC approval. It differs from the 2764 in six address lines and control pins, but at the same time is compatible with Motorola's 24-pin 64K Eprom. Intel claims its 2764, with an access time of 250 nanoseconds, is the fastest 64K Eprom available.

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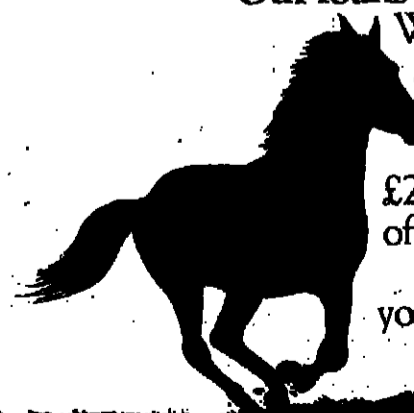
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LLOYDS BANK

Panasonic briefcase system

A HAND-HELD computer system that will fit into a briefcase, with interchangeable peripherals, has been developed by Panasonic. Models are expected to be available early next year.

The HHC system comprises Pa-

sonic's 6502-based RL-H1000 computer, an acoustic coupler and telephone modem, a cassette interface, a video RAM interface for a home TV set, a mini printer, RAM and ROM memory expanders and an I/O interface for six additional peripherals.

PEOPLE and EVENTS

ICL reorganises world marketing

ICL has made several changes in its worldwide marketing. Peter Ellis, deputy managing director, becomes responsible for the Worldwide Marketing Group, reporting to Dr Chris Wilson, the ICL group managing director.

Reporting to Ellis will be Les Cole, who becomes executive director, responsible for the central direction of operations of ICL's major subsidiaries in Australia, France, Germany, North America and South Africa.

A separate Services Group is being set up, to manage the company's service business, consisting of Basic, Data, task and education and training services. Director of the group will be Tim Holley.

Dr Wilson commented "In forming a Services Group I am emphasising the importance we see attaching to this high growth area for the company. The changes will shorten lines of communication, and realign units into groups with common characteristics."

Marcol award winners

MARCOL has made its annual awards to five members of staff who have shown outstanding achievement.

Clive Brooke, technical manager of Marcol's Transition, Consultancy and Systems Division, received an award for outstanding technical contribution for his work as senior technician on site at BP Chemicals South Wales.

Merit Award of the Year went to Anne Kennedy, training officer with the company's Hotel Systems Division. The Sales Achievement Award was presented to Kevin Sullivan for his new business success resulting in an overall profit gain of 40% in his sector.

Manager of the Year is Ian de Lande Long, overseas manager of the Advanced Systems Division, and the Project Team of the Year is the Runk Xerox project team. The award was accepted on their behalf by John Garrett, UK manager of the Advanced Systems Division.

John Kelly has become sales engineer with Dicoil, after three years with the company.

Gerald Nimberg has been appointed manager of online databases for Auerbach. He has had 13 years' experience in the data processing industry.



An ICL 7700 Information Processor, installed at the British Enterprise Exhibition, gave the visitor information on all exhibits, either on a video screen in response to specific questions, or in the form of a letter produced by the correspondence-quality printer. Our picture shows James Prior, Secretary of State for Employment and Mrs Prior, looking at the 7700 at the opening of the exhibition at Simpson (Piccadilly).

New consultancy

BELFAST's first computer staff recruitment company has been set up by Eamon Scullin. Scullin, a former business consultant with ICL, gained his commercial experience with Coopers and Lybrand and EOCO. His new company, called ESCO, will be based in Botanic Avenue, Belfast.

Ian Ginger has been appointed by Rediffon Computers as Southern Region support manager. He joined the company in 1975 as branch support manager.

Planning Research Corporation International UK has appointed Peter Ward software products manager. He was formerly a director of Adserve-SMI.

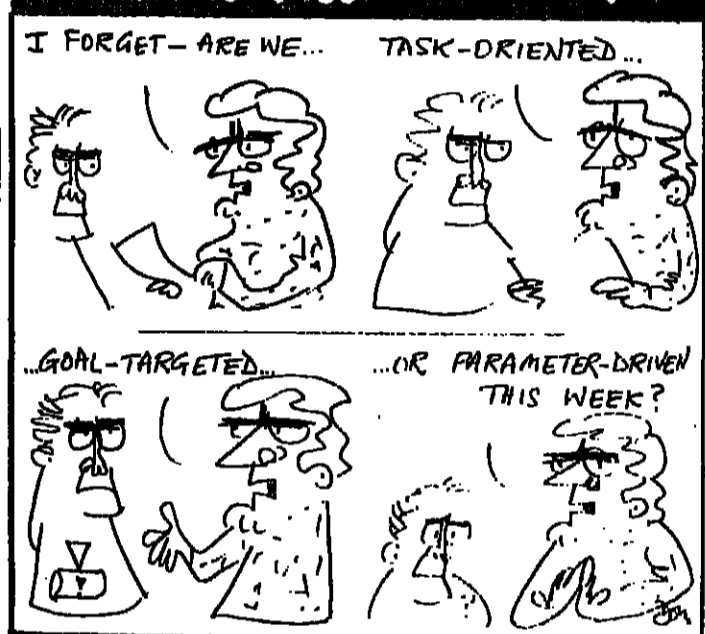
Computer League results

THE 1980 Computer Football League summer season has now ended and trophies and medals will be presented about the AV Martin on the Thames next Thursday, October 16. Presentations, plus a disco and buffet, take place between 8.00pm and midnight. Tickets are available for £5 from 31 Crescent Road, London E18. Cheques should be made payable to the Summer Computer League.

SUMMER COMPUTER LEAGUE TABLES

Division One					Division Two				
Gryphon	P.W.D.L.F.A.Pts				Forest	P.W.D.L.F.A.Pts			
Jedpu 'A'	10 8 2 0 42 5 18				NCR 'A'	10 8 2 0 45 10 18			
C.W.	10 7 2 1 31 9 16				ICL	10 6 1 3 27 14 13			
S.I.A.	10 4 1 5 20 28 9								
C.Share	10 3 2 5 21 24 8								
P. Office	10 2 1 7 10 28 5								
	10 1 2 7 14 43 4								

Liveware File



DIARY

OCTOBER 13-14
Seminar: Digital communications for satellites. Technology Transfer Society, Munich. (01) 242 4045.

OCTOBER 15
Seminar: International technical marketing. Technical Marketing Society of America/TTS, London.

OCTOBER 16
Meeting: The minicomputer: a complete package for the smaller user. A. Coates, Hull branch IDPM, Hull Great Hotel, Ferryway High Road, North Ferryway, North Humberside. 7.15.

OCTOBER 17
Meeting: Long haul optical fibre digital systems. TETEL Birmingham. 6.30. Tel: (01) 836 3357.

OCTOBER 18
Meeting: New EEC machine translation system. Prof Yonick Wilke, BCS Natural Translation Specialist Group, King's College, London. 6.00.

OCTOBER 19
Seminar: Managing a project. Richard Boulton, IDPM, The Industrial Society, Peter Runge House, 3 Carlton House Terrace, London SW1. 2.00.

OCTOBER 20
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OCTOBER 30
Seminar: Managing a project. Richard Boulton, IDPM, The Industrial Society, Peter Runge House, 3 Carlton House Terrace, London SW1. 2.00.

OCTOBER 31
Seminar: Managing a project. Richard Boulton, IDPM, The Industrial Society, Peter Runge House, 3 Carlton House Terrace, London SW1. 2.00.

COMPEC 80 will take place from November 4-8 at Olympia, London. The exhibition is organised by IPC Exhibitions and sponsored by Computer Weekly, Data Processing, Systems International and Practical Computing magazines. Practical Computing will also sponsor Microsystems 81. Compec 80 will display computers, peripherals and systems, and include for the first time an IBM UK stand. Among IBM's exhibits will be the 3101 display terminal.

Further information about Compec 80 and Microsystems 81 can be obtained from Chris Hipwell, Tel: (01) 261 6884.

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Financial service from Dataskil

THE ICL software house Dataskil has entered the highly competitive financial planning market with an announcement of its strategic financial planning service for company directors, called Balance the Alternatives.

The service is aimed at service industries and manufacturing industries to help them control cash and productivity management. It makes use of Dataskil's business planning package Prosport, which uses the CBI recommended Value Added approach to productivity optimisation.

The package links the key factors of profitability and the decisions that have to be made on costs, pricing, pay and manpower to get a good return on capital.

Services show 24% growth

LATEST statistics from the Department of Industry on UK computer services show an increase of about 24% in total billings between the first quarter of 1979 and the same period this year when they exceeded £124 million.

Of the bureau services listed in the figures, interactive time hire showed the most impressive growth, from £7.5 million in the first quarter of 1979 to £10.2 million this year.

Under the heading of professional services, system implementation work saw a 60% rise to £21.4 million.

The total number of people employed in the computer services industry increased from 22,581 to 24,155 over the 12-month period.



Mike Munnally of Business Computers (Systems) Ltd focuses on one of the latest innovations from Q1 - a version of the basic unit with an 80 character plasma display which features reverse video.

Q1 offers 80-character 12-line plasma display on Microlite

Q1 EUROPE LTD, the micro business systems company in which the National Enterprise

Board has a 50% stake, launched a whole range of new configurations and options for its Microlite desktop computer at Sibob last month.

A major new feature is an 80-character 12-line plasma display, to replace the existing 40 character display, and a 25-line plasma is in the pipeline.

Q1 is committed to the plasma display and the ones used by the company come not from Burroughs but from a private US company based near Q1's headquarters, New York headquarters. They are custom-made for Q1, and the company argues that they have several benefits over CRT displays.

Expanding

From its own point of view, being less bulky than a CRT they are easier to package and generate much less heat. From the user's point of view they are claimed to be flicker-free and to pose no other health problems.

The family of Q1 Microlite systems is expanding rapidly. Basis of all the systems is a Zilog Z80-based microcomputer programmed in PL/I or Cobol. The systems range from those with twin 400K-byte floppies, but the company will add a 5-megabyte Winchester disc drive shortly and is planning to go up to 120 megabytes with a shared database system consisting of up to 64 workstations, each of which will consist of a processor plus screen and keyboard.

Bubble memories are also set to take over from floppy discs at Q1. A version with two Texas Instruments 92K-bit bubble memories was shown at Sibob, and a 1-megabit bubble is on the way.

To start with, Q1 will offer bubbles as an option with floppies standard, but when the price of bubbles falls sufficiently, the reverse will be true.

Q1 started out in word processing in the US, but the prime European thrust is data processing with word processing an add-on. However, the shared database system would form the basis of a shared logic word processor.

Q1 systems are manufactured in Southampton for the European market, and are sold in Belgium, France, Germany, Portugal and Scandinavia as well as the UK. Between 300 and 400 systems have been sold in Europe, both through dealers and with a direct sales force.

Next market to be covered is Spain.

Harris into arrays

HARRIS Semiconductor is moving into the array logic business by second sourcing Monolithic Memories' family of PALs and Signetics' PLA 8100 series. In a year's time the company hopes to have working samples which can operate three times faster than the original devices.

All three companies have agreed that Harris should manufacture MMI's 16L8, 16R8, 16R6 and 16R4 PALs and Signetics' 8100 series of PLAs using its own TTL and ECL technologies. The chips will be pin compatible, but no mask exchanges are involved.

MMI's devices have typical access times of 35 to 45 nanoseconds while Signetics' PLAs operate with access times of typically 60 nanoseconds. Harris

aims to reduce these times to 15 to 20 nanoseconds.

Harris has entered the area because it sees a large potential market for high speed arrays.

"We see it as a large serviceable market which is still in its infancy and hasn't been attacked," a spokesman for the company told Computer Weekly.

Trade-off

PLAs and PALs work on similar principles to the PROM, which has a high degree of redundancy and comprises hardwired OR and AND logic gates. The PAL has hardwired OR but programmable AND gates, while the PLA is less redundant and has programmable AND and OR gates.

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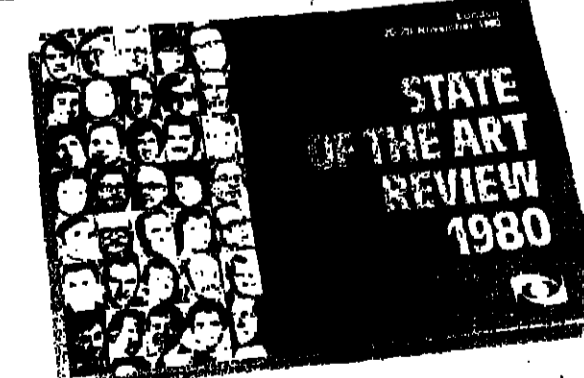
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THE Royal Shakespeare Company has launched a theatre booking service on Prestel through the pages of the British Tourist Authority. Tickets can be paid for by keying in a credit card number. An introductory offer gives £1.50 off tickets for the current production of Sean O'Casey's *Juno and the Paycock*, on at the Aldwych until November 8, starring Judi Dench and directed by Trevor Nunn (seen above).

Query system for MDBS

AN ad hoc query system for the micro database management system MDBS has been introduced to allow interrogation in an English-like language. Called QRS it comes from Micro Data Base Systems, maker of the CodaM management system for microcomputers (described CW, Sept 26).

QRS allows users to interactively specify queries, reports and updates more quickly than Basic, Cobol, Pascal and Fortran, says the maker.

For example: LIST NAME, PHONE FOR SEX=FEMALE, DEPARTMENT=43 and age <35 THRU DEPTS, EMPLOYEES would list all women under 35 in department 43 with their phone numbers.

Some report writing facilities are provided for more complex output, and retrieved data can be printed, saved or displayed on the VDU. Query definitions can be saved for future use.

Micro Data Base Systems, a US company, has appointed Systems Plus as UK agent. It is based at 19c Glengormley Park, Newtownabbey, BT26 7HE, tel 02313 42117.

MDBS costs between £800 and £1,000 and a hierarchical subset £235. QRS costs £300. A 64-page primer on micro database management systems is available from Systems Plus for £8.

BTS in Hong Kong talks

DESPITE its plan not to enter System X for any telecommunications contracts before the middle of next year, British Telecommunications Systems is considering Hong Kong's requirement for a limited amount of digital switching equipment for which tenders are due on November 3. Since January, BTS has entered talks with the USSR, Romania, Yugoslavia and Australia, and although it was not able to bid for the first phase of the Irish network earlier this year, it expects to compete for the later phases in a couple of years.

Training scheme may be voluntary

A VOLUNTARY training council for the computing services industry to take the place of a statutory industry training board looks likely to be set up, following discussions between the Manpower Services Commission and the Computing Services Association (CSA, October 2). The scheme would save service companies and

the DP departments of user companies from being drawn into the compulsory training levies and other arrangements involved with statutory boards.

Government support for the training council would be provided, probably of the order of £45,000 for three years, to get it started. Firms would pay for the

individual courses their staff attended. The co-ordinating body is expected to include representatives from the CSA, the BCS, and the IDPM.

The difficulty with computer training under the existing training board scheme is that so many computer staff work for user companies which already have to pay compulsory levies, for instance to the Engineering Industry Training Board.

The idea for the voluntary scheme was enthusiastically received at the CSA's annual general meeting, at which Alan Thomas of Data Logic was elected president. The new vice-president is Roger Graham of BIS.

Further success in the CSA's export efforts in Greece was announced, in the shape of an order for the design of an accounting system for the Greek Public Power Corporation, awarded to Arthur Andersen.

Addressing the CSA after the meeting, Peter Benton, managing director of British Telecom, blamed the backlog of the supply of communications lines on the disturbance caused by the ending of the pay freeze in 1978, but assured members he had plans for a normal service by 1982.

Hobby club to go on Prestel

NORTH London Hobby Computer Club is to become an information provider on Prestel and publish teleconferencing as well as details of club meetings. It plans to use the Prestel pages of Practical Computing, which in turn publishes through IPC Viewdata.

Anything you can do...

ADVANCED versions of Prestel systems, which include the ability to convert from the French Teletel and Canadian Teletel coding standards, are running experimentally at British Telecom's Marlesham Research Laboratories.

The scheme is called Prextend and, as well as preparing for future enhancements to Prestel, it exists to show potential foreign customers that not only can Prestel do anything its rivals can, but specific methods have been developed to do it.

The parallel attribute coding used by Teletel enables the colour, size and other attributes of the

display to be changed for each character as it appears, while Prestel uses control characters which occupy a space on the screen each time they are used.

When this capability is implemented in Prextend, the information can still be sent to a standard Prestel terminal and produce a sensible display: that is, the text itself is not destroyed. This is also true of Picture Prestel, which enables part of the screen to contain a colour photograph retrievable from the database, and of the high resolution graphics using dynamically redefinable character sets (CW, April 3).

Menus on Compuserve

MENUS and household advice from the magazine Better Homes and Gardens are to be made available online to users of Compuserve Information Service, the US time sharing service for hobbyists that already provides online news (CW, July 24). Users will also be able to order a range of computer-related books from their home terminals and pay for them by credit card. The menus will include costs and nutritional information, and there will also be advice on garden-

ing, decorating, crafts, travel and money management. One month's data will be held online at a time, on Compuserve's bureau in Columbus, Ohio. Eventually news from 11 different daily papers throughout the US will also be available to CIS's 4,000 subscribers.

Anyone with a standard terminal or home computer with communications facilities can access CIS via dial-up, paying \$5 an hour for connect time.

Chips help for non-NY banks

CHIPS, the New York system that handles transactions between clearing banks, is being enhanced to enable US dollar transactions involving banks outside New York also to be cleared the same day. The banks benefiting from saving a day's interest will be foreign as well as US based.

At present transactions between New York banks go through the clearing house fund, while non New York banks are covered by the so called Federal fund.

Under the new system, scheduled to go live in October 1981, all transactions will go through a single fund - a facility known as one fund clearing.

The new facility was considered last month by John Lee, executive vice president of the New York Clearing House Association, the organisation that runs Chips.

Lee took the opportunity to make the announcement at Sibos 80, the international banking operations seminar staged in Copenhagen by Swift, the interbank funds transfer organisation.

Not related

Swift and Chips are not related operationally in any way. Chips is a purely US run system for US dollar exchanges between banks, whereas Swift operates a worldwide message switching network transmitting a multitude of foreign currency transactions between banks in many countries.

One thing in common is that both organisations operate medium sized Burroughs mainframes. Swift uses Burroughs machines in Amsterdam, Brussels and New York State to switch multiplexed transaction messages transmitted at 96,000 bps by concentrators in the countries that use the service. Chips uses several Burroughs machines in New York for transaction processing.

A system that would have been a lot more like Chips if it had ever come to fruition was the ill fated Chaps system that the UK clearing banks spent £2 million on before it was scrapped early this year.

Chaps, the Clearing House Automated Payments Scheme, would have been based on an ICL 2960 system at the Bankers Automated Clearing Services centre.

It was killed partly because smaller potential users objected to the cost but also because the whole concept of a system based on a central mainframe was seen as rather outdated. Any future system will probably involve a network linking user banks' own computers.

BCS in a quandary over refresher test

CHANGING the examination syllabus and introducing refresher tests for old established members are just two of the changes being considered by the British Computer Society, said president Julian Bogod last week.

Speaking at a record attendance at the Hampshire branch of the BCS, he said that BCS membership should be considered as offering proof to employers of sound technical expertise, if not necessarily the particular skills needed for a particular job.

In reply to criticism that no other professional society stipulated re-testing of members, Bogod said that computing moved so fast that it was necessary for members to show they had kept up with the mainstream of developments.

He recognised that this might mean the loss to the society of those members who moved into more general management roles. Outlining the value of membership, Bogod said that "MBCS" currently stood for all the qualities expected of a professional - technical competence, maturity and responsibility, integrity, practical experience, commitment and social responsibility.

He cited employers who paid more to members than non-members (Prudential and Sun Life insurance companies), included membership as a requirement when advertising job vacancies (the Civil Service) and paid membership subscriptions (IBM).

Doubted

But employers' representatives present doubted the value of membership. David Barron, Professor of Computing at Southampton University and an employer as well as a teacher, said he took no account of BCS membership when interviewing job applicants and would find it hard to convince undergraduates entering the profession of the advantages of joining. Trevor Longman, managing director of IBM Information Ser-

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PPL blows out its tenth birthday cake

A COMPANY which has built its business entirely on packages celebrating its tenth birthday last week. In the last decade Package Programs Ltd has adopted and promoted many widely used packages, the most famous being the MMS general ledger and accounting system.

The continuing success of PPL in the software market was explained by chairman Roy Taylor in his celebratory speech. "We have established a successful philosophy in selling package programs with no modifications. Only in this way can we maintain systems, and we will expand because of our basic philosophy," he said.

Not a preparation for underwater exploration - our picture shows behavioural scientist Jane Alexander taking part in an investigation of the human factors involved in using the new Monarch PABX switchboard, conducted at British Telecom's Marlesham Research Laboratories.

Like similar devices used in aircraft cockpits, the mask enables eye movement patterns to be studied to see if the keyboard layout can be improved.



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COMPANY NEWS

Datapoint to pay \$114 million to set up own European base

JUST after announcing that it wants to take over the international network of distributors for its products currently controlled by TRW (CW, October 2), Datapoint has completed its acquisition of ailing key-to-disc supplier Inforex, including its European subsidiaries.

Compensation

In order to gain complete control of the existing distributors in Europe, Datapoint will have to make deals with several other organisations apart from TRW. Of the seven distributors in Europe five are only partly owned by the engineering giant. The other share-

holders include the Canadian Development Corp which owns the majority of Ventek, the Datapoint distributor in the UK. Datapoint estimates that if all the other organisations agree to sell their interests, in addition to TRW, the total payment will come to \$114 million. This includes compensation to TRW for transferring its master distributor agreement and allowing Datapoint to deal directly with another 21 distributors all over the world. The deal with TRW is expected to be completed by July next year, prior to Datapoint taking over the distributors in 1983.

Inforex in the UK is a much smaller operation than Ventek, but it is a major force in several European countries, including West Germany where TRW currently wholly owns the Datapoint distributor, Gier Electronics. The

acquisition of the Inforex European operation was seen by Datapoint as an important safeguard against losing distributors like Gier after 1983 if TRW refused to sell (CW, June 19). Now it looks like adding even greater strength to the European marketing side of what is one of the world's fastest growing computer suppliers.

The business now done by TRW's distributors provides Da-

datapoint with not much more than 20% of its total revenues even though they account for about 40% of all shipments. And Datapoint cannot enjoy the benefits of maintenance and lease revenues from countries outside the US.

Leader

Datapoint's financial results for its last fiscal year ended July 31 are expected to include a turnover

figure of well over \$300 million, compared with \$232 million in the previous year.

The company plans to maintain its fast growth rate by becoming a leader in the office systems market with its Integrated Electronic Office (COW, January 10).

Datapoint's plans for the existing Inforex products, including the 5000 file management system and 7000 intelligent cluster terminal, are less certain.

ABS changes its name

TRAFALGAR HOUSE subsidiary Allied Business Systems has changed its name to ABS Computers so that it can be seen as the true computer manufacturer it is, according to managing director John Elsdon.

The parent company's funds have helped ABS double its sales and support teams. It now has 20 salesmen, and Trafalgar House money will help ABS to fulfil its plan of opening offices in Manchester and Scotland over the next

few months. ABS has still not made up its mind about taking over Business Computer (Systems) Ltd which it acquired the option to purchase in 1978. At the time it took over BCSL's factory at Brighton and assumed the role effectively of an OEM supplier to BCSL.

ABS will have to decide soon about making the relationship even closer because the option to purchase expires at the end of the year.

The ABS financial year ended on September 30, but the company's financial figures are consolidated with those of its much bigger parent so it is difficult to ascertain the rate of growth of ABS or its financial health.

In its 1979 financial year BCSL, chucked up turnover and profit figures of £3,925,813 and £351,761, up 56% and 47% respectively on 1978.

Commodore profits leap

PET microcomputer manufacturer Commodore International has reported outstanding results for the year ended June 30. Turnover jumped to nearly \$126 million compared with \$71 million the year before, while net profits leapt 259% to \$16.9 million.

United Leasing to expand overseas

HAVING chalked up a turnover of nearly £10 million in its financial year ended September 30, 67% up on the year before, United Leasing is now looking for expansion abroad.

Last month United set up a West German subsidiary in Munich and in November a New York office will be opened trading under the name of Unicom Inc.

In addition to picking up lease customers in the US, the New York office will be used to buy low-cost secondhand IBM machines for leasing in Europe at competitive prices.

The transatlantic flow of new IBM computers taking advantage of the high price of the pound was stemmed in the summer when IBM ruled that a machine transferred between continents could only be maintained if the purchaser applied for an RPO, request price quote, costing £130,000.

Profitability

The attraction of importing US machines was also lessened by a 11% cut in UK 303X prices in the summer.

United chairman Parry Mitchell said he hoped that the US and West Germany would provide his company with as much business as the UK in 18 months.

Another firm sues AT&T

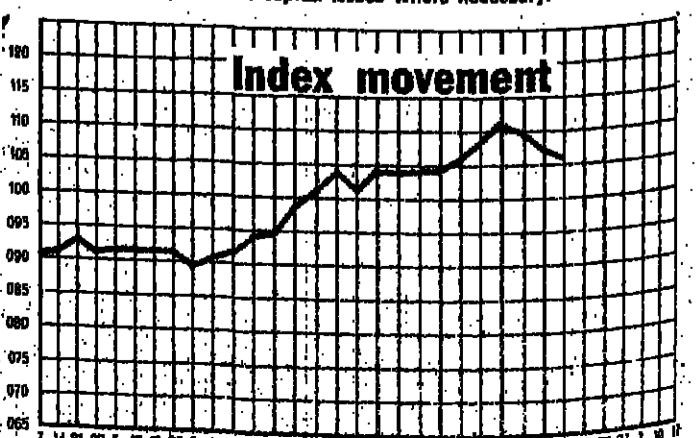
ANOTHER anti-trust suit in the US, this time from Telescreens, a maker of computer controlled equipment for the telephone industry, which is to seek a permanent injunction to stop AT&T and its manufacturing and operating subsidiaries monopolising the market.

The main suit against AT&T, by the US government Justice Department, is scheduled to go to trial in January.

CW SHARES TABLE

Date: 9/10/80				Index: 106.54 Change: -0.42			
1980		1979		1980		1979	
High	Low	High	Low	High	Low	High	Low
816	240	A Comp Tech (25p)	40	111	20	Foran	14
43	28	B Comp Tech (25p)	31	105	18	Foran	14
100	100	C Comp Tech (25p)	31	105	18	Foran	14
100	100	D Comp Tech (25p)	31	105	18	Foran	14
100	100	E Comp Tech (25p)	31	105	18	Foran	14
100	100	F Comp Tech (25p)	31	105	18	Foran	14
100	100	G Comp Tech (25p)	31	105	18	Foran	14
100	100	H Comp Tech (25p)	31	105	18	Foran	14
100	100	I Comp Tech (25p)	31	105	18	Foran	14
100	100	J Comp Tech (25p)	31	105	18	Foran	14
100	100	K Comp Tech (25p)	31	105	18	Foran	14
100	100	L Comp Tech (25p)	31	105	18	Foran	14
100	100	M Comp Tech (25p)	31	105	18	Foran	14
100	100	N Comp Tech (25p)	31	105	18	Foran	14
100	100	O Comp Tech (25p)	31	105	18	Foran	14
100	100	P Comp Tech (25p)	31	105	18	Foran	14
100	100	Q Comp Tech (25p)	31	105	18	Foran	14
100	100	R Comp Tech (25p)	31	105	18	Foran	14
100	100	S Comp Tech (25p)	31	105	18	Foran	14
100	100	T Comp Tech (25p)	31	105	18	Foran	14
100	100	U Comp Tech (25p)	31	105	18	Foran	14
100	100	V Comp Tech (25p)	31	105	18	Foran	14
100	100	W Comp Tech (25p)	31	105	18	Foran	14
100	100	X Comp Tech (25p)	31	105	18	Foran	14
100	100	Y Comp Tech (25p)	31	105	18	Foran	14
100	100	Z Comp Tech (25p)	31	105	18	Foran	14

The table shows the closing prices in London on Friday and in America on Thursday. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted for capital issues where necessary.



JAPAN'S progress in the field of computer memory devices will be revealed at the 8th IFIP World Computer Congress being held in Tokyo this weekend and Melbourne next.

One of Japan's leading authorities on the subject, Dr M. Terajima of Nippon Telegraph and Telephone Public Corp, is presenting a paper outlining recent advances.

Throughput

Japanese research is now concentrated on bubble memories and rotating storage devices with much higher densities than existing equipment.

Associate Professor A. Y. Montgomery, of the Department of Computer Science at Monash University in Melbourne, who is one of the Congress organisers, said memory was the key to high per-

EVERY three years the most high-powered gathering of computer experts in the world takes place under the aegis of the International Federation of Information Processing, IFIP. This year is the 8th World Computer Congress staged by IFIP,

and it differs from previous events in having two venues: Tokyo and Melbourne.

Most of the 30 or so invited papers, spread among ten major subject areas, will be repeated in Melbourne after their first airing in

Tokyo this week. But the submitted papers and panel sessions, about 30 at each event, will differ, thus making a plane trip from Tokyo to Melbourne worthwhile for the enthusiast with enough time, money and justification.

Japan leads with memory devices

by Doug Moore, computer editor of The Australian

formance computers. In this area the Japanese were leaders in 64K-bit chip developments which would significantly improve the cost of large-scale memory, lie said.

"They have been working on a 64K-bit memory ahead of the US and are beginning to show the way in this type of technology."

Australian computer people are also looking forward to a paper on CAFS (content addressable file store) to be presented by V. A. J. Muller of ICL's R&D centre in Stevenage. Montgomery said this

CL development heralded the advent of powerful database processors.

CAFS meant that data would be more readily available and that the cost of accessing data would fall, he said. It also meant that strategic decisions which might previously have been difficult or even impossible to make within an organisation could now be taken.

Interest is also being aroused by a test of intellectual strength which will take place at the Melbourne congress when one of Australia's leading chess players will take on a

Cyber 171. The last time a world chess master played a computer - at the National Computing Conference in the US - three draws were forced. This was the first time that man has not been able to dominate the machine completely. Perhaps in Melbourne it will win a game.

A highlight of the exhibition which accompanies the IFIP Congress in Melbourne will be the stand of Hartley Computer Applications, an Australian company based in Brisbane.

On October 2, before the Con-

gress, Hartley announced its entry into the computer hardware manufacturing business, and its new 3900 range will be on show at the Melbourne exhibition next week.

Hartley could be the first Australian computer manufacturer, a breed which is rather thin on the ground, to export hardware in significant quantities.

Its new 3900 hardware is based on Intel 8086 microprocessors, and it is understood that Intel is extremely impressed with Hartley's manufacturing plans.

Hartley said "several world

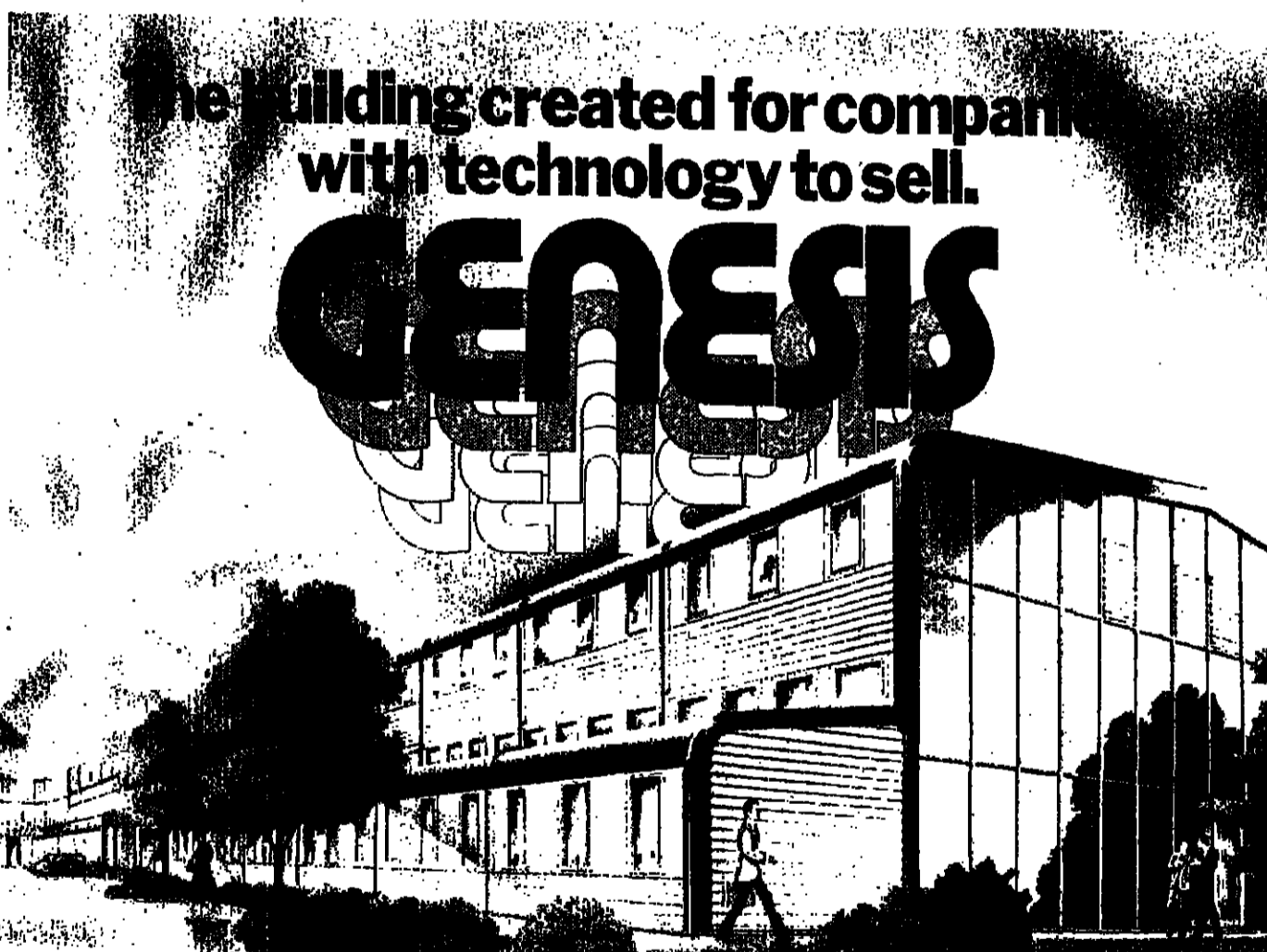


firsts" would be revealed. The new hardware will support the company's existing software, which currently runs on Wang, Data General and DEC machines.

Its best-known package is the Hapas system for professional accountants. More than 1,000 Hapas systems have been installed and nearly 50% of orders now come from abroad. More than 200 systems have been installed in the UK.

Small system Hartley will continue to provide full support for its existing users, but new users are expected to be given the choice of US or 3900 hardware on which to run their packages.

In Australia Hartley also markets a small business system called Sheila, of which about 100 have been sold. Sheila could be launched in the UK later next year.



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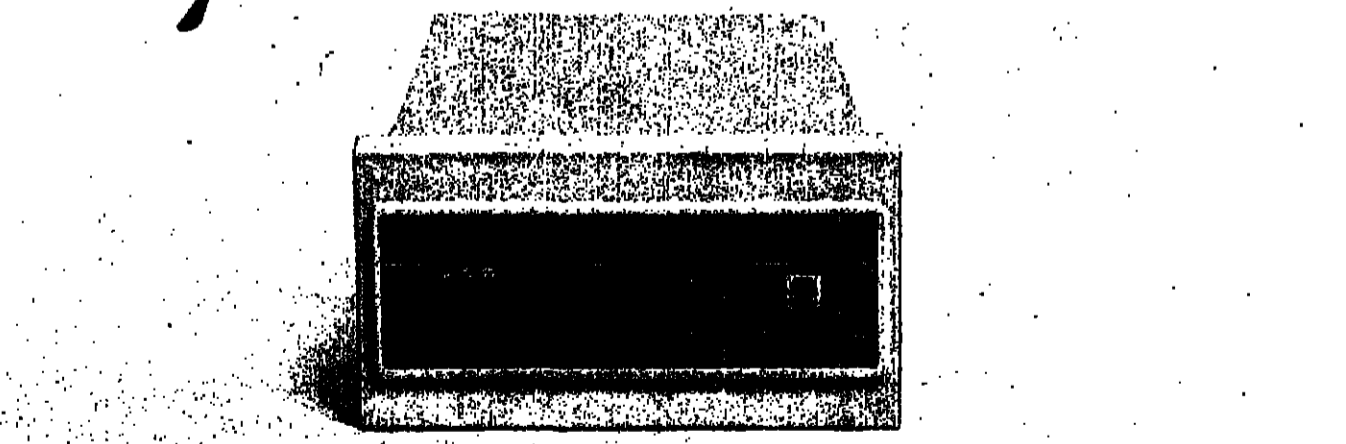
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CW 6/10

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DATA/PRO/COMPUTER WEEKLY USER SURVEY ON BUSINESS SYSTEMS AND MINIS

HP top of user 'pops' — but Burroughs gets the thumbs down

HEWLETT-PACKARD comes out the clear winner and Burroughs gets the thumbs down in the business computers and minis section of the Datapro Computer Weekly survey of satisfaction among UK computer users.

Companies with fewer than 10 users have been eliminated from the results, reducing the field from 33 to 17.

Four companies, Redifon, DEC, IBM and Texas Instruments, join Hewlett-Packard with a rating of 3.0 or more out of four. A whole mass are on 2.9 including ICL, GEC, CTL and Prime, and NCR trails the bunch with 2.7. There is then a gap of over half a point before Burroughs brings up the rear with a worrying 2.1 rating.

Easy to operate
Hewlett-Packard, with 21 users in the survey, is represented by all three lines: the HP 3000, 2000 and 1000, with 15 users of the first. The company rated particularly high on ease of operation, reliability, system software and maintenance.

As with the mainframe survey (CW, September 18) technical support was marked low for all manufacturers, but Hewlett-Packard was near the top of a low-rated section. Only one company scored as high as 3.0 in this section, and that was IBM for its documentation.

DEC and IBM tied for second place with a 3.1 rating for user satisfaction.

The full spread of PDP-11 machines was represented in the survey, and among the 136 DEC respondents there were also 11 PDP-8 and six VAX users.

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SURVEY REPORT BY TIM PALMER

Weakness on technical support was the main reason for DEC being pipped for top place in the survey. The minis rate particularly high for reliability and ease of operation.

Most users
ICL has the largest number of users in the survey, 160, split three ways. One hundred and two have 2903 series machines, and it is noticeable that while the average for the 2903 model is an overall satisfaction rating of 3.0, the rating on the biggest, the 2904/50, falls to 2.7.

The most obvious fall-off of satisfaction as ICL users grow is in the software: 2903 users are reasonably happy; 2904/50 users are discontented. The hope must be that TME on the ME29 comes as a pleasant surprise to the more mature customers. The 2904/50 appears to be strikingly less reliable than the 2903: the latter gets a high 3.4 rating, whereas the 2904/50 gets only 2.7. This could be a reflection of networking problems.

There are 38 ICL System Ten users in the survey, and they appear to be the happiest in the ICL camp, which is a credit to the company to the extent that it reflects a successful takeover of the Singer operations.

In fact, System Ten users are among the happiest in the survey with an overall satisfaction rating of 3.1. The machine comes out particularly well on reliability and ease of use, and the users also give ICL a glowing 3.0 for both responsiveness and effectiveness of its maintenance. Technical support comes out comparatively well too.

There are 15 users of the Microdata Reality system from ICL in the survey, and the machine lived up to its publicity in that it was given 3.5 for ease of operation, 3.5 for the operating system and 3.0 for ease of programming.

Technical support and maintenance are the factors which pulled the company down.

The 16 CTL users in the survey were divided nine for the Modular One, seven for the 8000 series, which is likely to mean a similar split between technical and commercial applications. Nothing in CTL's performance was outstanding, implying that the overall satisfaction rating was boosted by self-sufficient technical users.

CTL's maintenance engineers are, it seems, very good at turning out quickly (mark of 3.2) but not much good when they arrive (2.6). A woeful 1.9 for trouble-shooting in the technical support section was counterbalanced by a 3.0 for ease of programming and for processor reliability.

The 11 users of Ventek Datapoint machines liked the hardware and system software but gave the company very low marks for technical support.

Honeywell was represented by 28 Level 62 users, plus four Level 61 and four Level 6. The company fell just below the mass in the middle of the survey. Let down by technical support and strikingly low marks for ease of programming and ease of conversion, the company achieved an overall satisfaction rating of 2.8, which was in sharp contrast to its top position among the large mainframe users.

Six of the Level 62 users would not recommend the machine to another user; 14 are planning upgrades this year and seven will stay with Honeywell, while seven will defect.

Data General achieved the same satisfaction rating, 2.8, as

THE UK part of the survey was carried out by Datapro Research Corporation of Delran, New Jersey in conjunction with Computer Weekly. Simultaneous surveys were done in partnership with O1-Informatique in France and Computerwoche in Germany.

Datapro plans to publish the survey report in the October supplement to its Datapro 70 service. Details of this can be had from Datapro Services SA, CH-1164 Buchillon, Switzerland, Telephone Lausanne (021) 763731, telex 26495 dssa ch, or Datapro Research Corporation 1085 Underwood Boulevard, Delran, NJ 08075, US, Telephone 609-764-0100, Telex 84-3392.

Honeywell, and was represented by 10 Nova users, seven Edige users and five others.

As in the mainframe survey, its neglect of technical support which really upsets Burroughs users. The company got 1.7 for trouble-shooting, and 1.6 for both education and documentation. Its maintenance rated almost as low: 2.1 for responsiveness and 2.0 for effectiveness.

Star prize
The only good mark in the survey for Burroughs is 3.0 for ease of operation, while the operating systems are broadly liked. Another cause for strong dissatisfaction is again lateness of delivery: 13 users complained of this.

Among the companies excluded because the user response was too low are Computer Automation, whose three Sylva users gave the only full marks, four out of four, for ease of operation.

The three Harris users gave Vulcan the star prize for operating systems with a 3.7 rating; the Wang operating system was the next nearest with 3.5.

The data analyst is concerned in identifying and defining entity types, not individual entities. Thus, defining what things in the enterprise mean is the most important part of his job.

The entity types of an enterprise can take one of several different forms. A business will often invent terms of its own to fit its particular needs, so it is worth considering the kinds of entity types one should look for: Real entity types. These are tangible objects or things, such as machines, people, buildings. Activity entity types. These are activities of interest to the enterprise, about which data could

MAINFRAMES

Honeywell Bull	3.0
NCR	2.9
DEC	2.8
IBM	2.8
Siemens	2.8
Univac	2.8
NAS-Hel	2.8
Burroughs	2.4
Univac	2.4

MINICOMPUTERS

Prime	3.2
Tandem	3.0
DEC	2.9
Hewlett-Packard	2.9
Dietz	2.4
Siemens	2.1

BUSINESS COMPUTERS

Datapoint	3.5
Wang	3.4
CTM	3.2
MAI	3.2

The two little-known companies in the German list are CTM and MAI.

CTM is Computer Technik Müller, a long established German business computer manufacturer which builds its own 16-bit processor. Its products are sold in the UK by Scope Data Systems of Sheffield.

MAI is better known for the name of its business computer, Basic Four. It is a US company,

Interrecherche is the miniature which builds the French-language version of the Microdata Reality. On January 1, it merges with Logabax to form a new company, IRI Interrecherche, and its products will be sold in the UK through the existing Logabax operation.

SEMS is the number one European-owned minicomputer, which now has a UK subsidiary; its low rating probably reflects the aftermath of the merger between

Defining essential facts and functions

IN the first article in this series, data analysis was introduced as a systems development methodology.

The two phases of data analysis — functional analysis and entity analysis — were described, and it was emphasised that analysis was undertaken separately from any design considerations.

The following five articles in the series will be dealing with entity analysis. This phase is concerned with finding out what there is in the business and what types of things and facts it needs in order to operate.

Entities and entity types
The building block upon which all of entity analysis is based is called an entity, and an entity is "anything relevant to the enterprise about which information could be or is kept".

The Oxford Dictionary says that an entity is: "A thing's existence as opposed to its qualities or relationships". This is an important point in entity analysis. An entity is represented by data, it is not itself data. For instance, Rosemary Rock-Evans, exists as a person but her name, date of birth, sex and so on are just "qualities" which may be represented as data about her.

A second term used in entity analysis is "entity type". An entity type covers all the entities relevant to the enterprise, which fit a given definition. The entity Rosemary Rock-Evans appears to be of the Person entity type. (The fact that the entity type could be Employee, Wife, Consultant, etc, will be dealt with in a later article.)

In Figure 1 an example is given of some entity types and entities or "occurrences of the entity type". (Strictly speaking it does not show entity occurrences, but rather the names by which these entities are commonly known.)

The data analyst is concerned in identifying and defining entity types, not individual entities. Thus, defining what things in the enterprise mean is the most important part of his job.

The entity types of an enterprise can take one of several different forms. A business will often invent terms of its own to fit its particular needs, so it is worth considering the kinds of entity types one should look for: Real entity types. These are tangible objects or things, such as machines, people, buildings. Activity entity types. These are activities of interest to the enterprise, about which data could

Entity Type	Entity (or occurrences of entity type)
Person	John Smith Jimmy Mack Alice Cooper
Building	23, Acacia Avenue 288, High Holborn The Willows, Long Lane
Car	LSM 936

Figure 1. Examples of some entity types and entities.

Brightonholmes Hospital

The hospital deals with patients on an appointment system. The patients must make an appointment for a clinic session held at one of the hospital's clinics. The doctors are then allocated one or more appointments within a clinic session, but only one doctor will be present at the appointment.

If a patient attends for an operation, the operations are scheduled and allocated to theatre sessions held in the hospital's operating theatres.

Section 1 — Part 2

of our series describing a systems development methodology

be kept, for instance, accidents, illnesses, inquiries.

Conceptual entity types. A business can invent or use purely conceptual entity types, both intangible and in some cases unique to the business, which might be: employment (the time a person spent in a job), cost centre (an area of cost control within the business), shop order (an order placed on a jobbing shop).

Determination of entity types
Determining the entity types of a business tends to be an iterative process, based on an increasing understanding of the business and how it operates.

It is easy to see that the "real" entity types will be the easiest to discover and the "conceptual" the hardest, but if the guidelines are followed, all the major types should be determined in a relatively short time. So how should entity types be determined?

1. If possible, as a starting point, a description of what the business does should be obtained, covering what objects the business handles, what it makes if it is a manufacturing business, what it may deal with and what it needs in order to operate. This could even be the annual report, and certainly divisional operating manuals. Documentation of existing systems is likely to be useful, so long as care is taken to distinguish between entities inherent to the enterprise and concepts introduced for the convenience of the system.

In Figure 2 an example of a hospital is given. The entity types have been given in bold type.

In the example there are some "real" entity types — patients, doctors, clinics; some activities — appointments, operations; and some "conceptual" entity types — clinic session, theatre session.

Note that each noun or noun phrase may name a candidate entity type in a description of this nature.

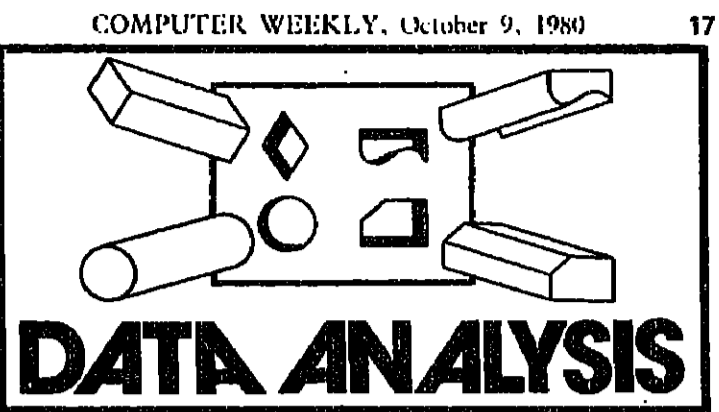
The next stage is to find out what the enterprise collects information about. This will involve a search of existing records, files and papers. In our example of the hospital, we would expect to find such things as patient record cards, doctors' record cards and so on, which confirm our choice of patient and doctor as entity types.

We may also find new entity types: patient's medication schedule — the drugs the patient has been prescribed (information collected may be the time the drug is due and the dose); patient's ward record — the patients which have been allocated to the ward (information

Figure 2. The entity types at a hospital, are in bold type.

The hospital deals with patients on an appointment system. The patients must make an appointment for a clinic session held at one of the hospital's clinics. The doctors are then allocated one or more appointments within a clinic session, but only one doctor will be present at the appointment.

If a patient attends for an operation, the operations are scheduled and allocated to theatre sessions held in the hospital's operating theatres.



by Ian Palmer and Rosemary Rock-Evans

6. Status, eg "draft", "ratified".
 7. Definition. A precise statement, which makes it clear whether or not an entity is of the type being documented.
 8. Owners of entity occurrences. The users authorised to create, delete and amend occurrences of the entity type together with any special confidentiality considerations.
 9. Occurrences. The maximum, minimum and average occurrences of the entity in the area under study and also the extent to which the population is growing or decreasing.
 10. Other observations, eg timeliness, how long records of the entity type are kept and how up-to-date they are; consistency, what other entity types must exist if this entity type is to exist; and availability, where details of the entity type are available at present.
- In this article, steps have been described which enable the analyst to identify some of the entity types in an enterprise. As will be seen in later articles, the list obtained using these steps is not likely to be complete; but the more fundamental entity types which have been identified, on which the next stages in entity analysis can be based.

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A Microdata company

Why maintenance of software should be contracted out

MAINTAINING your installation's software is the job we all love to hate. It is often given to a junior member of staff who then finds that the specs are not quite up to the standard recommended by either IBM or the National Computing Centre.

The lucky programmer may even find that all he/she is getting is a program listing plus a couple of flowcharts!

As some terms mean all things to all men in DP, it is necessary to define what is meant by the term "maintenance". In this instance we are talking about the maintenance of software packages in a user's installation and this means the continual updating and slight modification that occurs from time to time.

There are many reasons why users have to maintain their software, the most common being changes in the law and technological innovation such as a new peri-

pheral that doesn't quite have the same codes as the present system.

Necessity

The necessity for maintenance arises with packages having the following characteristics:

1. Between 250,000 and one million lines of source code;
2. Only 20% of the facilities of the package are currently used in the installation;
3. Another 20% of the facilities in the package are potentially useful to the installation. The installation does not use these facilities on account of their low cost/benefit ratio. The low ratio is due to the expense and risk involved in bringing the facilities into use;
4. Not every user uses the same 20% of the package and there is a 20% of the package that nobody uses;
5. There is a new release of the package every six months and a

typical installation is three behind with its release level;

6. A good man has to be put on the maintenance;
7. Some maintenance is critical and when it has to be done it causes trouble; and,
8. Most maintenance has no pay-off.

The operating system and most items of system software come into this category. Major applications packages may also have similar characteristics and often their nature makes this a large and time critical job which disrupts other operations.

Problems

Often resources have to be devoted to the maintenance that are urgently required on user oriented systems. How can this disruption be avoided?

The problems are due to factors arising from the characteristics of a

major software package. The detailed knowledge of the package is only used occasionally and, inevitably, time has to be spent re-learning when the knowledge is needed.

The relearning is always less than perfect which is probably one of the reasons why critical maintenance tends to go wrong.

Another reason could well be that however well versed the maintenance programmer is in the software package he is probably less well informed on the requirements of the application area.

This can cover anything from computer system operation to the teleprocessing network or the user requirements from the application package.

This lack of understanding can lead to a misinterpretation of the modification requirements. In any event it imposes a need for extensive testing to ensure that there is complete understanding all round.

by Cliff Dilloway



Keeping up with the new releases of software and updating existing suites is always a low priority job and this occasionally results in problems. The whole responsibility could be contracted out, as is done for hardware.

Consultant Cliff Dilloway explains what is involved and describes how the use of specialists can prove beneficial.

The management at most installations believe that they have to keep software package maintenance under their wing as their own direct responsibility. This attitude contrasts strongly with the view taken on hardware maintenance.

In reality a lot of what is called hardware maintenance is software maintenance of a similar nature to that we have described carried out on the microprograms held in control storage.

Justification

Is there any justification for there being a cut-off level in the software hierarchies above which maintenance cannot be contracted out to support organisations? Let us consider what such a system support company would need to do.

First, it would need to maintain a level of competence in the software. Its specialists are likely to maintain a higher level of competence than a maintenance programmer who only looks at the software every 12 months or so.

Second, the maintenance service needs to be instantly available. However if the service is up to date with its preventative maintenance (application of releases and fixes) the number of occasions when true instant availability is necessary will be very rare.

But such support has to be as prompt as that for hardware maintenance.

Third, it needs to understand the application requirements. As a specialist's service it should be able to understand what the software is required to do much better than the occasional maintenance programmer.

The ramifications of accounting, stock control or payroll are easily misunderstood by those not conversant with the terminology. Users appreciate it when they only need to sketch out their requirements for a specialist to understand and implement them.

Fourth, a service company should be able to keep the cost of contracted maintenance to no more than if the work was being done by a staff programmer.

This is likely to be so, as a specialist should be able to do the work in a much shorter time than the maintenance programmer who has to go back to the books and square one every time he tackles a job.

These requirements can be met. They are, after all, the requirements that a computer bureau user expects from the service given by the bureau.

Where is such a service to be

found and what will the charges be? Ideally one would like to employ a large organisation with the resources to meet any demand.

But the service needs to be personal to the installation. Somebody who is known and trusted has to be allowed in at all sorts of odd times to carry out the maintenance tasks.

Large organisations are unlikely to fit this description, and small software houses, which would seem to offer a solution, are unlikely to have the staff with the necessary experience.

So I suggest that a suitable person to whom software maintenance could be contracted would be either the proprietor of a small software house or a one man consultancy specialising in this type of work.

Many installations have lost systems programmer who leaves set up on his own and he may well be the ideal person to employ. Many members of the Association of Independent Computer Specialists fit this description.

The basis of payment could be an annual contracted sum. At first sight the cost may look a bit but bearing in mind that there is no National Insurance or pension contribution involved, it will seem realistic that this can be a very economical buy.

There are always additional overheads on just employing an individual and these too are saved.

The arrangement could be for a fixed annual sum the maintenance programmer would make all such changes as were required by the software supplier or were sought by the user.

Habit

Additionally, an extra initial payment may be necessary in order to catch up with the current backlog. It may seem strange to a data processing manager but factoring maintenance is often carried out on this contracted basis.

It is in the interest of the contractor to carry out preventive maintenance and, once a year contractor gets to hear of a particular problem he will come and fix it before you ever discover that it exists.

At the present time there is very little contracted maintenance of software. In the future it is easy to see that an installation will be using "get the programmer in" when a problem arises, in much the same way as they might otherwise call a plumber, electrician or other specialist.

It is only habit that insists that all programmers should be on call on their staff.

COURSES

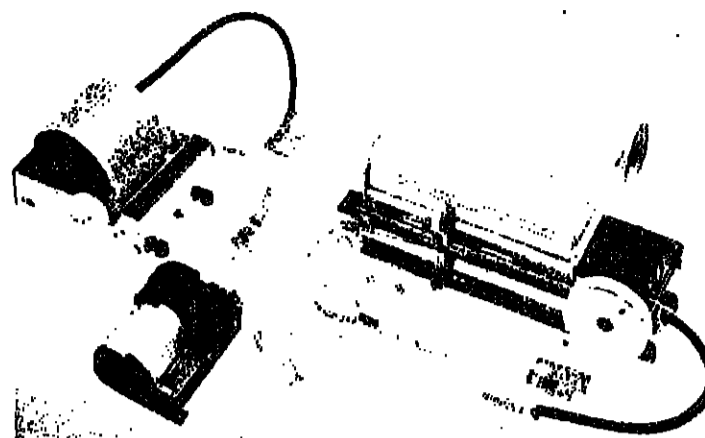
THE Management Studies Centre of ICFC is running two courses designed for small and medium sized firms who are considering computerisation for the first time, or who wish to upgrade their facilities. Computers - Successful First Time Use will be held in London on October 29. Negotiating Computer Contracts will take place in London on October 30. For further information, telephone: Neil Crichton-Miller on (07535) 56633.

A PRACTICAL course on visual simulation techniques with emphasis on hands on experience, is taking place between December 15-19. Aimed at management scientists, production engineers and programmers, the course is being organised by the University of Lancaster.

information, contact JG Crooker, Centre in Simulation, Department of Operational Research, Gillon House, University of Lancaster, Bailrigg, Lancaster.

HANDS-ON Microprocessor Workshop is a four-day course to provide a foundation in the skills required for design, programming and testing of microprocessor systems. A microcomputer training system is used to teach participants the use of a number of skills including how to use interrupts, internal timers and D converters and the selection and use of software development tools. No prior background in microprocessor application is required, but an engineering technical orientation is required. The course, organised by Integrated Computer Systems, will be held in London from October 27-30 November 25-28 and January 27-30.

PRODUCT NEWS INTERNATIONAL



Micro based pulse generator

ELEX has introduced a microprocessor-based, programmable pulse generator that is said to offer repetition frequencies up to 100 MHz with amplitudes up to 22 volts, using independently set high and low limits. Programmable rise and fall times from less than three nanoseconds are produced.

Called E-H 1560, up to eight independent outputs may be

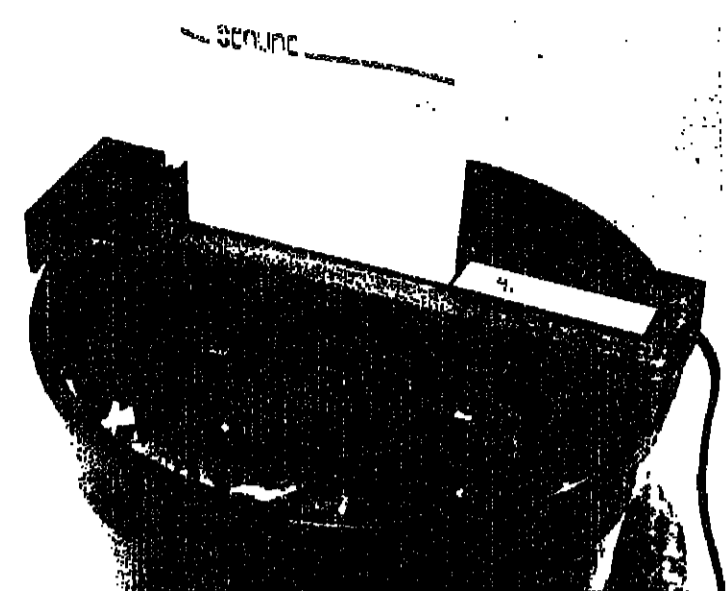
simultaneously controlled through the use of slave units and up to 10 pre-defined programme set-ups can be stored within the pulse generator to save interface activity time.

Control

It features front panel control of all functions through a built-in keyboard and a parameter display showing current settings for channel number, program number, period, delay, width, rise time, fall time, high level and low level. This display operates whether the instrument has been set up from the front keyboard or through remote control.

The E-H 1560 can be driven remotely through its IEEE-488 interface or its RS 232C interface, both of which are standard.

Elex Systems Ltd (CW), Crossway House, Bracknell, RG12 1DA. Tel: 0344 52929.



Portable document destroyer

THE Bin Top is a portable shredder for destroying documents and has an adjustable 6-inch extension arm, which fits over most standard waste paper bins.

It is available from Sealine Office Equipment, and can be

moved to any location within reach of a 13 amp socket. It weighs eight pounds and costs £89 plus VAT. Sealine Office Equipment (CW), Sealine House, Geddings Road, Hoddeston, Herts. Tel: 09328 65525.

Distributor

GMT PRODUCTS has been appointed a distributor for the range of Alpha-numeric printer mechanisms and interface cards from Matsushita Electric.

GMT Products Ltd (CW), 22 Hartfield Road, Wimbledon, SW19 3TD. Tel: 01-947 7234.

Vacuum resin casting plant

A VACUUM resin casting plant has been announced by Balzers High Vacuum, for potting small electronic components.

Called the GAT 227, it consists of two independent 5-litre heated discharge mixers working under vacuum in which resins are degassed, then pumped into the flow mixer where the activated resin compound is mixed in.

When the casting cycle of the four dosing valves is complete, the trolley returns automatically to its starting position.

Resin mixing ratios can be adjusted from 1:1 to 1:20 and the dosing valves can deliver infinitely variable charges from 0.03 to 0.35cm³. Pallet transport travel is

17mm per cycle.

The control system incorporates a pot life monitoring system and flushing arrangement. The plant measures 1,700 x 1,700 x 800mm.

Balzers High Vacuum (CW), Northbridge Road, Berkhamsted, Herts. Tel: (04427) 2181.

Desk top shredder

A SHREDDER with a cutting speed of 10.6 meters per minute is available from Rexel.

Called the Verishred Desktop, it has self-sharpening cutters which are guaranteed for two years. The shredder is slightly larger than a typewriter and has a shred width of 4 millimeters. It retails at £231 plus VAT.

Rexel (CW), Gatehouse Road, Aylesbury, HP19 3DT. Tel: (0296 8141).

Word processor that can prepare telex tape

A WORD processor capable of preparing telex tape is available from Volker Craig (UK).

Called the Teletaper, it links a QWERTY keyboard and a video terminal with a telex preparation unit. It is available singly or as a complete unit. Teletaper enables 16 pages of text with a capacity of 2,000 characters each to be prepared and stored for transmission.

Used in conjunction with Teletouch, the telex machine can be kept clear for receiving and sending messages.

The Teletaper costs £1,200 and the Teletouch from £1,300 for a 50 chps machine, to about £1,800 for the 75 chps version.

Volker Craig UK (CW), Volker Craig House, Toppits Lane, Wotton, Herts. Tel: (92) 40043.

Digital-to-synchro converter

A DIGITAL-TO-SYNCHRO converter that is pin programmable for either 16 or 14-bit resolution has been introduced by Natel Engineering.

The converter, called DSC5116, has a transformation ratio of $\pm 0.05\%$. Power supply requirements are \pm volts.

Short-circuit and thermal-overload protection are incorporated in the converter.

The output of the DSC116 is

compatible with any 3-wire synchro or 4-wire resolver. The reference input can be either 26 V-rms or 115 V-rms at 60 or 400 Hz. The unit measures $3.1 \times 2.6 \times 0.82$ inches. A hermetically sealed metal case is available as an option. Prices start at \$495 in 1-9 quantities.

Natel Engineering (CW), 8954 Mason Ave., Canoga Park, CA 91306. Tel: (0101-213) 882 9620.

Range of DP furniture

A RANGE of DP furniture, manufactured by 3K is available in the UK from Black Arrow.

The Compact M200 EDP range provides a facility for varying the VDU screen angle. All EDP desks are equipped with cable entry facility and hinged top models enable excess cable to be stored inside.

Work stations may be designed using components from this range to provide a single or multiple

operator station as required. Components in the range include a hexagonal turntable with revolving top, forming a three-way work station, costing £375; two sizes of desks for VDUs costing £104, £158; and a side table with revolving top priced at £188.

Black Arrow (CW), 748 London Road, Hounslow, Middlesex. Tel: (01) 572 7474.

Low-cost QWERTY keyboard

FROM Rastra Electronics comes the Synertek Systems KTM-2 low-cost keyboard, for use with video terminals. It provides a full ASCII keyboard and the logic to display 24 lines of 40 characters each with full graphics.

The keyboard has 54 keys and generates 128 ASCII characters - upper and lower case letters, numerics, special and control keys - with the graphic and alphanumeric characters capable of simultaneous display.

Rastra Electronics Ltd (CW), 275-281 King Street, Hammer-smith, London, W6 9NF. Tel: 01-748 3143.

Daisy wheel

A DAISY wheel with upper and lower case characters that is compatible with Qume kit is available from TSE Computer Supplies. The 12-inch wheel has a light italic font.

TSE Computer Supplies Ltd (CW), 31 Kensington Church Street, London, W8 4LL. Tel: 01-937 3666.

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DAVID WITTY, Chief Executive, 2nd October, 1980.

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COMPUTER WEEKLY

OCTOBER 30, 1980

RECRUITMENT & EDUCATION SUPPLEMENT

the most informative publication of its kind in the UK

In spite of rising unemployment the computer industry continues in its demand for a regular supply of qualified computer people. As the market expands, so to does the need for new skills and abilities. Although more and more training facilities are available, the chronic shortage of manpower remains, causing a major problem for all companies involved with computers.

Our annual Computer Weekly recruitment and education supplement, especially planned to coincide with and be available at Compec '80 — Britain's biggest computer exhibition — will be packed full of valuable information covering the whole spectrum of the computer job market. Editorial contribution will be substantial, appealing to data processing professionals, as well as the next generation of young people who will be required to take up the

challenge and share in the achievements of the next decade and beyond.

This year's supplement will be published on October 30 and distributed in the normal way to all Computer Weekly readers. Copies will also be available to visitors from the Computer Weekly stand at Compec. Last year, some 34,745 visitors attended the exhibition.

The supplement is a unique publication, being the only newspaper of its kind produced in the U.K. dealing specifically with the subject of careers and job opportunities for DP personnel. The combination of the supplement's extensive editorial support, the large circulation, and Computer Weekly's standing in the industry, means this supplement is a must for recruitment advertisers.

Computer Weekly has the largest circulation in the specialist computer press (91,656 ABC July-Dec 1979). This has increased continually over the years to reflect the ever growing number of personnel in the computer industry. Additionally, and equally important, the newspaper has the highest number of individually requested copies of any weekly computer publication.

For further details regarding the supplement and the special Compec free computerised recruitment service, contact your nearest Computer Weekly Classified Office: London: 01-261 8028/8019/8174/8097. Manchester: 061-872 8861. Birmingham: 021-356 4838.

COMPUTER WEEKLY

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Published to coincide with and be available at
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Britain's biggest computer exhibition.
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Copy Deadline: 3.30 pm Monday prior
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Appointments THE NEWSPAPER COMPUTER PEOPLE RELY ON Appointments

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Contracts for Analysts and Programmers

Ref:			
IBM	8100/4331 DOS/VSE Systems Programmer for long-term contracts. Many benefits.	MIDDLE EAST	231
IBM	OS Assembler Programmer. Cobol helpful.	SURREY	234
IBM	DOS/VSE BAL CICS Systems Programmer. Urgently required for conversion work.	SURREY	229
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IBM	3031 OS Cobol Programmer	S. COAST	228
VAX	RSX Cobol Analyst. Long-term contract.	GLOUC.	235
CORAL 66	For long-term project	BENELUX	236
IBM	8100 COBOL CICS. Immediate start, flexible, new development project. 6 months minimum. Open item billing system.	LONDON	239

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Our client, based in Kent, is building a team for an important on-line development on ICL 2976 hardware using VME/B and COBOL/IDMS. If your programming skills match the requirement, and you are interested in a well-paid six-month contract starting now, contact Moray Robertson on 01-491 4708 (daytime) or 01-435 8400 (evenings and weekends).

These represent just some of the opportunities available to experienced computer professionals. Whether you are an established contractor preparing for your next assignment, or permanently employed and interested in gaining expert advice on all aspects of contracting talk to the Knight Software team now — Moray, Denise or Richard on 01-491 4708 (01-408 0280 evenings and weekends).

Analyst/ Programmers : Programmers

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The company's rapidly expanding Computer Division in Johannesburg is engaged in an extensive systems development programme and this means exceptional scope for experienced Analysts and Programmers with drive and the ability to work with the minimum of supervision.

The company operates an IBM 370/165 mainframe updating to IBM 4341 next year. The operating system is DOS/VSE with POWER and CICS using IDMS Database. Distributed processing with IBM System 34 links factories and major regional centres. Continuing development work on new systems means that there is now a need for:

ANALYST/PROGRAMMERS

For both mainframe and System 34 work. You should have several years' sound practical experience in programming and systems design and implementation. A good knowledge of COBOL and/or RPG2 is required and ideally some experience of programming under CICS software.

PROGRAMMERS

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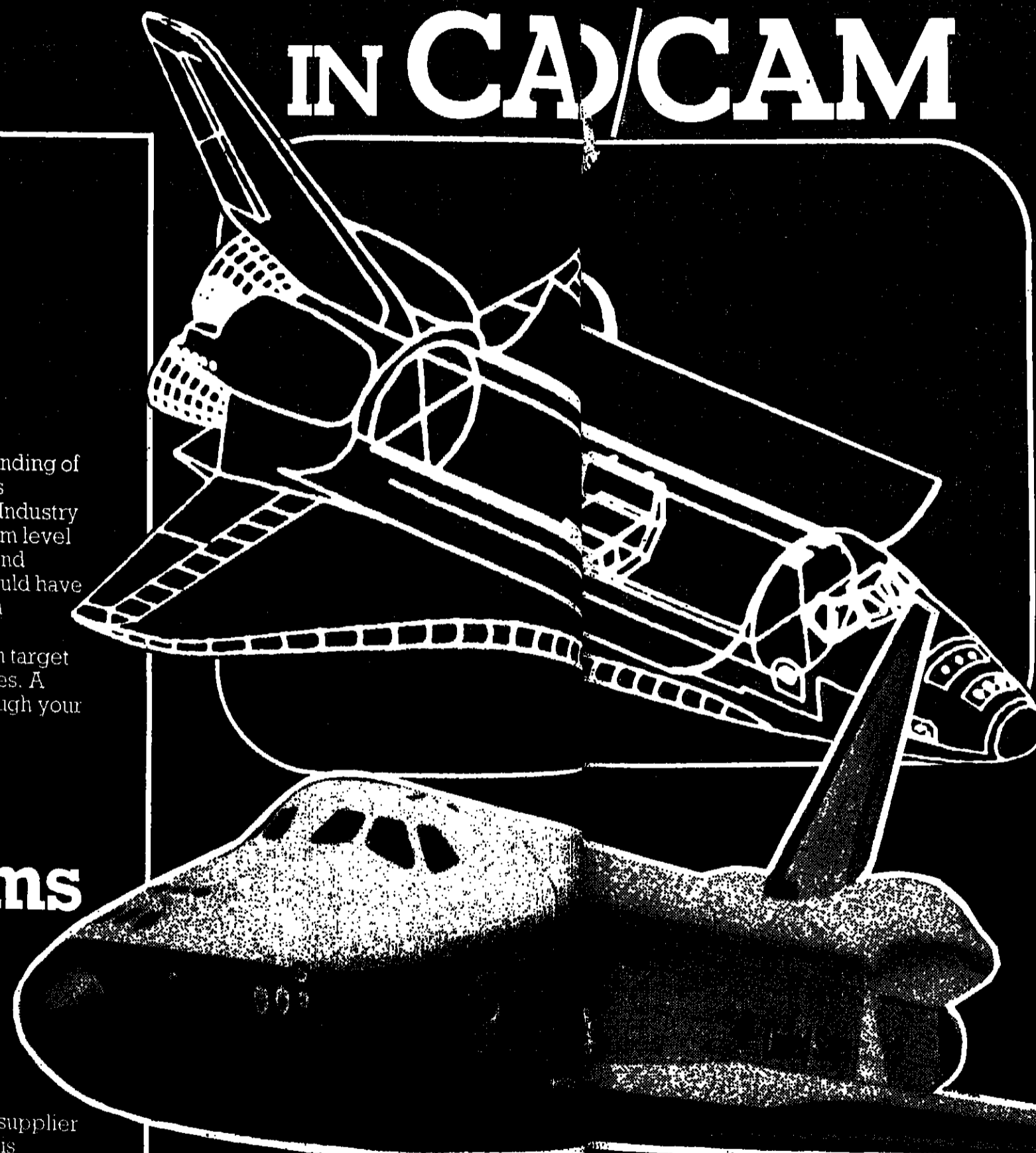
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North Cheshire was formed four years ago.

Exceptionally successful, the Company, still with a relatively small but dedicated and dynamic team offers significant opportunities. Applicon has committed itself heavily to an R & D Programme, a pattern of reinvestment that will ensure that the Company remain leaders in one of the most exciting areas of computer application.

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TO £9K + CAR

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Ideally you will have worked on DEC PDP II Systems with manufacturer or user. You should be familiar with discs, tapes, memories, displays etc. A 'systems' approach to problems and the ability to think clearly and logically is important.

Whilst a major part of your work load will be systems problem solving you will also be called upon to assist in installation, support and sales, particularly exhibitions and trade shows.

A six week programme of product training will be undertaken in Burlington, Massachusetts, USA.

All positions have an attractive range of fringe benefits in addition to salary, car and relocation package and offer excellent opportunity for job satisfaction and career progression.

As I.M.P.C. have been exclusively retained as consultants to Applicon all enquiries or applications should be made to John George, Managing Director, on Manchester 061-236 7026 or if you prefer write to him at our Manchester Office at the address below:



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Applicants should ideally possess successful d.p. sales experience but those able to demonstrate sales potential will be considered. Excellent training facilities are provided. Applicants currently resident in the West Midlands will be given preference.

This position offers genuine prospects in a solid, professional company. **Contact: Mike Gaitskell**

Team Leader

Nottingham

up to £7,500 + Benefits

An opportunity exists for a Team Leader to work on a number of challenging applications currently under development within the Research Department. The company is well known and respected and has an advanced computer installation comprising main frame and mini computers.

Applicants should have ideally 5 years programming experience and be proficient with FORTRAN, COBOL or Assembler languages in an IBM environment. Familiarity with mini computer applications development would be desirable but the ability to lead and motivate teams of programmers and analysts is essential. **Contact: Bev Stevens**

Team Leader - Programming

Birmingham

£6,500 + car scheme + 2 Benefits

This mini computer systems company, a very effective subsidiary of a prominent and respected group, continues to operate successfully throughout the U.K. They now seek a PROGRAMMING TEAM LEADER for their Birmingham office.

Applicants should have 3 years COBOL experience on any hardware and must either have acted in a supervisory role or have developed sufficiently to be capable of assuming this responsibility. Conditions of employment are impressive and the benefits considerably enhance the basic salary. **Contact: Mike Gaitskell**

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Applicants should have at least 1 years IBM COBOL experience and have the desire to work on the development of applications in an IMS DL/I environment. **Contact: Bev Stevens**

Gloucestershire

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Systems Analyst

£6-7,000 Review 1 December

Applicants should ideally have 2 years experience of commercial systems but those having less experience, but relative to administrative or distribution applications will receive equal consideration. The successful person will possess management potential.

Senior Programmer

£6,500 Review 1 December

Candidates should be educated to A level and possess 2 years COBOL programming experience preferably on ICL 1900 or 2900 equipment. Knowledge of PLAN and FORTRAN while being an advantage is not essential. These are excellent opportunities to work on interesting projects in a purposeful atmosphere. Relocation assistance and normal large company benefits apply. **Contact: Mike Gaitskell**

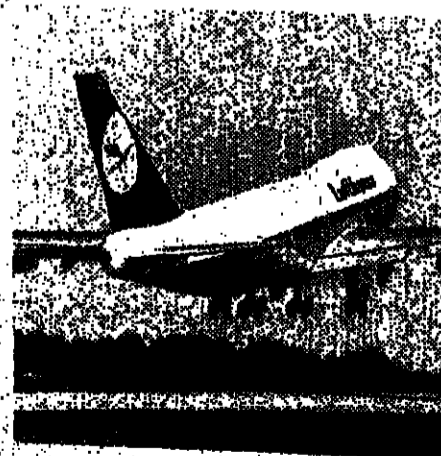
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For the Operations Department in the Data Processing Division in Frankfurt, we are looking for System Programmers for our central system UNIVAC 494 and 1100/80 also IBM 3033 and 3032.

Applicants should have either graduated from a university or completed a technical qualification in the areas of computer science, economics or science.

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A high commencing salary is offered supported by valuable benefits and outstanding career prospects.

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PROGRAMMERS should have a minimum of one year's COBOL or Assembler experience.

ANALYSTS should have a programming background and eighteen months' analysis experience.

PROJECT LEADERS should be capable of designing and controlling projects from feasibility to implementation.

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YOUR NEXT MOVE?

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Ref. CW/48/80

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S. Home Counties

£7,500-£10,500

Our client is an extremely well known financial organisation, with a well publicised and highly successful growth record in the British finance world. The Company's d.p. function has grown from a fairly standard batch environment to a multi-machine (both mainframes and minis) site running both real-time, and on-line systems.

Modus is seeking a high quality of experience although the minimum acceptable is 3-4 years, ideally covering on-line systems design and implementation.

Company benefits are worth c. £2,000 on top of the salaries quoted above.

Software Consultants

To design real-time and communications systems operating software

London, Beds. or Herts.

to £11,000 + profits

Software specialists who can demonstrate a deep knowledge of real-time and/or communications software design, especially in conjunction with good experience of modern minis or micros, now have the opportunity to join a highly professional specialist software consultancy.

This company has successfully established a reputation in the USA and Europe for technical excellence and superiority and is striving to do the same in the U.K. Candidates should therefore possess a degree, be personable as individuals, and display a high level of intellectual ability.

Consultants: — Mike Creamer or Andy Wright

If the advertised positions do not match your experience or aspirations, Mike and Andy are always available for a confidential discussion of the possibilities. An informal meeting — often an essential part of the process — can be quickly arranged.

International Personnel Consultants
Modus Management Services Limited
148 Watling Street, Radlett, Herts. WD7 7JH
Telephone: Radlett (09276) 3077

Senior Technical Authors

Software or hardware dedicated — project orientated development systems

Bedfordshire

from £7,500

New projects in this computer manufacturer require additional senior Technical Authors to work on the Software and Hardware documentation. The successful candidates will work in a brand-new office, congenial surroundings, and with all large company benefits (not the least of which is employment security).

Applicants must be thorough professionals. On the software side, a good knowledge of operating systems and at least one language; on the hardware side, the ability to read logic backed by sound computing experience. Preference will be given to all-rounders.

Modus also has vacancies in Italy for really good Software Technical Authors. Call us for a detailed discussion — wherever you wish to work.

Programmers — Cobol or Basic

To work for a specialist commercial consultancy

London

salaries £8,000 to £10,500

Programmers and analyst-programmers with a minimum of 3 years experience gained in a commercial environment are urgently required to join this expanding and extremely unusual systems house. Appointees will work on a range of minis and mainframes and be involved from the start in helping clients arrive at the best possible solutions to their business problems.

The company has an excellent track record of growth and expansion, and gives a high priority to ensuring that employees gain the maximum possible benefit from the continuing success, by awarding high salaries and participation in an extremely forward looking share scheme. On-going training and career development programmes are also in operation.

Micro Software Development

Master-slave operating software, compilers, sort/merge utilities etc.

West Germany

£17,000-£24,000

The German software industry is spending vast sums on some extremely advanced development projects at present, providing ideal opportunities for British software professionals to spend 2-3 years on the Continent and gain some excellent experience with which to return to the U.K.

Candidates must, however, have exactly the right experience in order to join the project teams — e.g. specific experience of sorts, compilers, or multi-station operating systems software. In addition, for the latter project, sound knowledge of a high-level language such as PASCAL or PLM (or any PL variant) is essential.

Database Designers & Programmers

To work on database orientated distributed processing systems

Surrey

salaries to £12,000 +

Our client is a well known and highly respected Bank with, therefore, tremendous resources and a long term commitment to advanced d.p. systems, the design and development of which has been commenced. The shortfall in the company's d.p. expertise is in the area of database design and vacancies exist at various levels from Programmers up to Project Leader positions. Candidates must have a track record in database design and/or implementation rather than simply d.b. systems exposure, whilst more junior applicants must have IMS experience. Superb benefits are offered, in line with most major banking opportunities.

HOME or ABROAD

These are just five of the exciting opportunities with our clients that will earn you £10-£18K.

Plus generous tax-free overseas allowances

DP CONSULTANT, London or the North feasibility studies — D.P. strategy — minis/micros (CR 220)

SYSTEMS DESIGNER, London or Germany, real time systems, e.g. automation, medical, process control, (CR 204)

BUSINESS ANALYST, Pearson Gulf, to implement system development standards and/or prepare specifications for users requirements. (CR 244)

RING NOW for details, quoting the consultants reference.

db executive (kingston) ltd 01-549 8441 (24-hr) (3074)

LIVERPOOL POLYTECHNIC DEPARTMENT OF MATHEMATICS Principal or Senior Lecturer in Computing/Data Processing

C1982-211235 — SENIOR LECTURER
C19808-213248 — PRINCIPAL LECTURER

A senior member of staff is required in the Computing/Data Processing section to teach D.P. Systems Analysis and Design and Information Systems to degree, diploma and professional courses.

Applicants should possess qualifications and preferably recent practical experience relevant to this area of work. A knowledge of the use of micro computers and/or data base software in business applications would be particularly welcome.

PLEASE QUOTE REFERENCE: L.P. 465
Closing date: 14 days from the appearance of the advertisement
Application forms and further particulars from: the Personnel Office, Liverpool Polytechnic, 2 Rodney Street, Liverpool L1 2UA. Tel: 051-708 6420 Ext. 43. (3074)

NATIONAL INSTITUTE FOR RESEARCH IN DAIRYING (UNIVERSITY OF READING) PROGRAMMER

A Programmer is required in the Statistics department to advise and assist users of a Prime mini-computer and other terminals online to a mainframe ICL System 4 Computer. Applicants should have experience of FORTRAN programming, and some knowledge of statistical analysis would be an advantage.

Qualifications: Degree or HNC in Computer Studies, Mathematics or Statistics.

Appointment will be as Scientific Officer (4,800 to £5,400 with starting salary according to qualifications and experience. Non-contributory superannuation.

Application forms are obtainable from the Secretary, N.I.R.D., Shinfield, Reading RG2 9AT. Quota reference 80/24. (3075)

UNIVERSITY OF READING
SENIOR
COMPUTER
OFFICER

COMPUTER CENTRE

This is a new post with responsibility for the operation of a small group of small and microprocessor support service to University users. Experience of microprocessors and microcomputer systems is essential, together with a relevant degree or equivalent qualification, and a knowledge of programming and systems.

Salary is on a scale £7,725-£11,115 per annum, with a review pending, and application on form A and further particulars from the Personnel Office, University of Reading, Whiteknights, Reading RG6 2AA. Tel: 0116 275488 Ext. 224. Please quote ref. 9CD/CC/CW. (3076)

Research Machines Computers for Science & Education

Research Machines is a leading UK manufacturer of small computers and computer networks for the scientific, engineering and education markets. We hold a strong market position and are expanding.

Excellent innovative design is a necessary part of our continuing success. Our Research and Development team secures our continuing position in the UK and we hope will also lead us to the forefront in Europe.

R & D Management

We would like to bring mature management expertise and experience into our Research and Development team.

We are looking for two excellent people. A hardware manager and a

software manager to join a first class group. Their functions will be to plan and co-ordinate individual projects and to maintain project schedules day to day. They will provide day to day support for their engineers and programmers, contribute to long term strategy, and provide managerial support on technical matters to other departments.

You will be supported by working directors with technical expertise, and a company enjoying a good reputation. It presents an exciting opportunity to play a part in determining the future of a successful organisation.

We offer a competitive salary, a contribution to relocation expenses, four weeks paid annual holiday and free life and disability insurance. A contributory pension scheme and private health scheme are being introduced.

If you have had at least two years' experience managing hardware or software development, please write in confidence for more details.

Systems Hardware Designers Systems Programmers/ Analysts.

We design for the future. Here is a chance to join a first class R & D team. Our primary aim is to produce top quality design in support of our current and future range of microcomputers. The environment is stimulating and you will enjoy working with excellent tools. The surroundings are pleasant and we are within walking distance of the centre of Oxford.

We offer a competitive salary, four weeks' paid annual holiday, free life and disability insurance. A contributory pension scheme and private health scheme are being introduced.

Please write to us in confidence with full details of your experience to date.

Correspondence to: Mrs. D.L. Fischer, Research Machines Ltd, Mill Street, Oxford, OX2 6BW.

FACILITIES MANAGEMENT BUSINESS SYSTEMS CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY
SOFTWARE PACKAGES COMPUTER SECURITY RECRUITMENT ADVERTISING FACILITIES MANAGEMENT
CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY BUSINESS SYSTEMS SOFTWARE PACKAGES

HEXAGON CONTRACT DIVISION

- IBM COBOL CICS DL/1 AN/PROGRAMMERS**
Initial 3-month contract for very experienced personnel with more than 8 years' DP background. DOS/VSE knowledge would be an added advantage.
- IBM MVS SYSTEMS PROGRAMMER**
Knowledge of JESII, TSO and CICS also required for contract in London Area.
- PDP BASIC + PROGRAMMERS**
A vacancy for personnel with more than 12 months' experience of BASIC+2. Knowledge of RSX11 also necessary.
- PRIME COBOL PROGRAMMERS & TEAM LEADERS**
We are setting up several teams for 6-12-month projects in Central London.
- IBM COBOL+PLI+DOS PROGRAMMERS**
Initial two-month maintenance contract in West London.
- IBM APL ANALYST/PROGRAMMER**
We are looking for 2 experienced APL Analyst/Programmers for locations in London and the Home Counties. A commercial background is an added advantage.
- PDP CORAL 66 PROGRAMMERS**
Two vacancies for CORAL 66 Programmers with minimum 12 months' experience for On-Line Data Entry System.
- IBM OS COBOL+CICS SENIOR PROGRAMMER**
Six-month contract in London working on various on-line Engineering Products.
- VENTEK DATASHARE/DATABUS SENIOR PROG.**
3-6-month contract in London for Stock Control project.
- IBM MARK IV PROGRAMMERS**
It is unlikely that you will get a better paid contract in the London Area. Several years' experience essential.

Hexagon is currently expanding its Contract Division and would therefore be very happy to discuss these and other contract vacancies. If you are now seeking your next contract, or thinking of contracting as your next career move, why not call us for a "no obligation" chat? We are here until 8 p.m. most evenings. (3078)

HEXAGON
computer services

Hexagon House 345 Windsor Street, London W1V 3TE

01-438-3671

THE UNIVERSITY OF ASTON IN BIRMINGHAM

COMPUTING SERVICE STAFF

The Computing Service is responsible for the provision of computing facilities to all departments of the University. A Harris 500 system with terminal access for 40 users is due to be delivered later this year. This will supplement current facilities which include a large ICL 1904S, a Hewlett-Packard 2000 and a share of a Dec 2060 situated at Birmingham University.

A vacancy exists in the Systems Group which is responsible for the development and maintenance of system facilities on the above equipment and for communications software linking the ICL machine and later the Harris computer to a regional network.

A vacancy exists in the User Services Group to assist in the development and implementation of applications packages and the provision of documentation for users.

Candidates for either post should preferably hold a degree with a strong computing content and/or have significant computing experience. Salary on the scale Other Related 1B £4795-£8095 with initial salary according to qualifications and experience.

Further details and application form from Mr. A. G. Reed, Staffing Department, quoting reference 07452/CW. The University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. Tel: 021 359 3611 Ext. 847.

(4040)

UNIVERSITY OF LONDON GOLDSMITH'S COLLEGE

TECHNICIAN Grade 5

Applications are invited for the post of Technician Grade 5 in the Mathematics Department to maintain and supervise use of computer equipment and develop software for micro computer system. Knowledge of basic and assembly language programming essential.

Salary on scale 15 £557-£7195 with £387 per annum in lieu of London Allowance.

Write for further details to the Personnel Officer, University of London, Goldsmith's College, New Cross, London SE14 6NU. Closing date for applications 24th October 1980. (13020)

SOFTWARE ENGINEERS / DESIGNERS

£11,000+ HERTS / BEDS.

Our Client, a young and rapidly expanding software house currently require software designers in the scientific and technical fields.

The ideal candidates will have a degree in Computer Science coupled with a sound background with either Mini or Micro experience. Extensive knowledge of Assembler, Coral and RTL-2 is of paramount importance.

In return we can offer you an attractive benefits package together with an informal, flexible management structure.

SENIOR SOFTWARE PROGRAMMER

£9,000+ HERTFORDSHIRE

Our client, one of the world leaders in the field of manufacturing and supplying the Process Industries is currently seeking a Senior Software Standards Programmer to head up their new Software Standards Section.

The ideal candidate will have a degree or equivalent in a computing or engineering discipline together with around five years Software experience some of which shall have been gained in a Standards or Maintenance role. An in-depth knowledge of Assembler is highly desirable.

Age is immaterial to a candidate who can show leadership to a team of six as well as being able to give a professional image to visiting clients from both the UK and overseas.

To find out more about the excellent benefits packages please contact Colin Maslen on (0727) 35113 or write to him at: Blue Arrow Executive Selection, 2 Holywell Hill, St. Albans, Herts.

Blue Arrow Executive Selection

OXFORD UNIVERSITY Robot Welding Project

An interdisciplinary research group created on the Department of Engineering Science is to be formed beginning in October to work on robots with special application to the welding of thin sheet metal. The work will be in collaboration with British Leyland Technology Ltd and will draw on existing expertise in the University within the Control Engineering, Programming Research and Image Analysis Groups. The project is funded by the SER as part of the new initiative in industrial robotics.

Time now research posts will form the nucleus of this group. They comprise a unique opportunity for young engineers to develop and make the technology of an exciting new field. The hardware involved will include an AEA 1100 robot, 151 11/2" x 1" micro computers and access to a VAX 11/780 system.

1. PROJECT ENGINEER

This post involves responsibility for the day-to-day running of the project. Knowledge of electro-mechanical systems, sensors, digital electronics or welding would be useful.

2. TWO SOFTWARE ENGINEERS

One post is for a systems programmer who will also make available modern programming tools and inter computer links for the project. The other is for an applications programmer to develop micro-based software for control of torch position and weld parameters based on sensory feedback from the weld pool. Longer term aims include improvements in the teaching and automatic diagnosis of robots. These posts will require close collaboration with the Programming Research Control Engineering, and Image Analysis Groups.

The posts are initially for a 3-year period on incremental scales £5,605 to £9,595 (Grade 1A) or for exceptionally well-qualified candidates £8,845 to £11,575 (Grade II). The salaries are under review.

Applications, including a curriculum vitae and the names of three referees, should be forwarded to The Administrator, Department of Engineering Science, University of Oxford, Parks Road, Oxford OX1 3PJ. (1001)

Planning & Transportation Urban Traffic Control Centre Manager

£7287-£7722 p.a. (award pending)

Required to be responsible for the day to day management, maintenance and development of the Urban Traffic Control System and for the maintenance of all traffic control equipment in the County.

The system covers 400 traffic signal installations, 240 in the Greater Nottingham area being controlled by a Ferranti Dual 700G Computer System.

Applicants (male or female) should preferably have a degree in Electrical Engineering or other appropriate discipline with extensive experience in both computer software hardware and staff supervision and deployment.

Relocation expenses where appropriate and a Casual Car allowance.

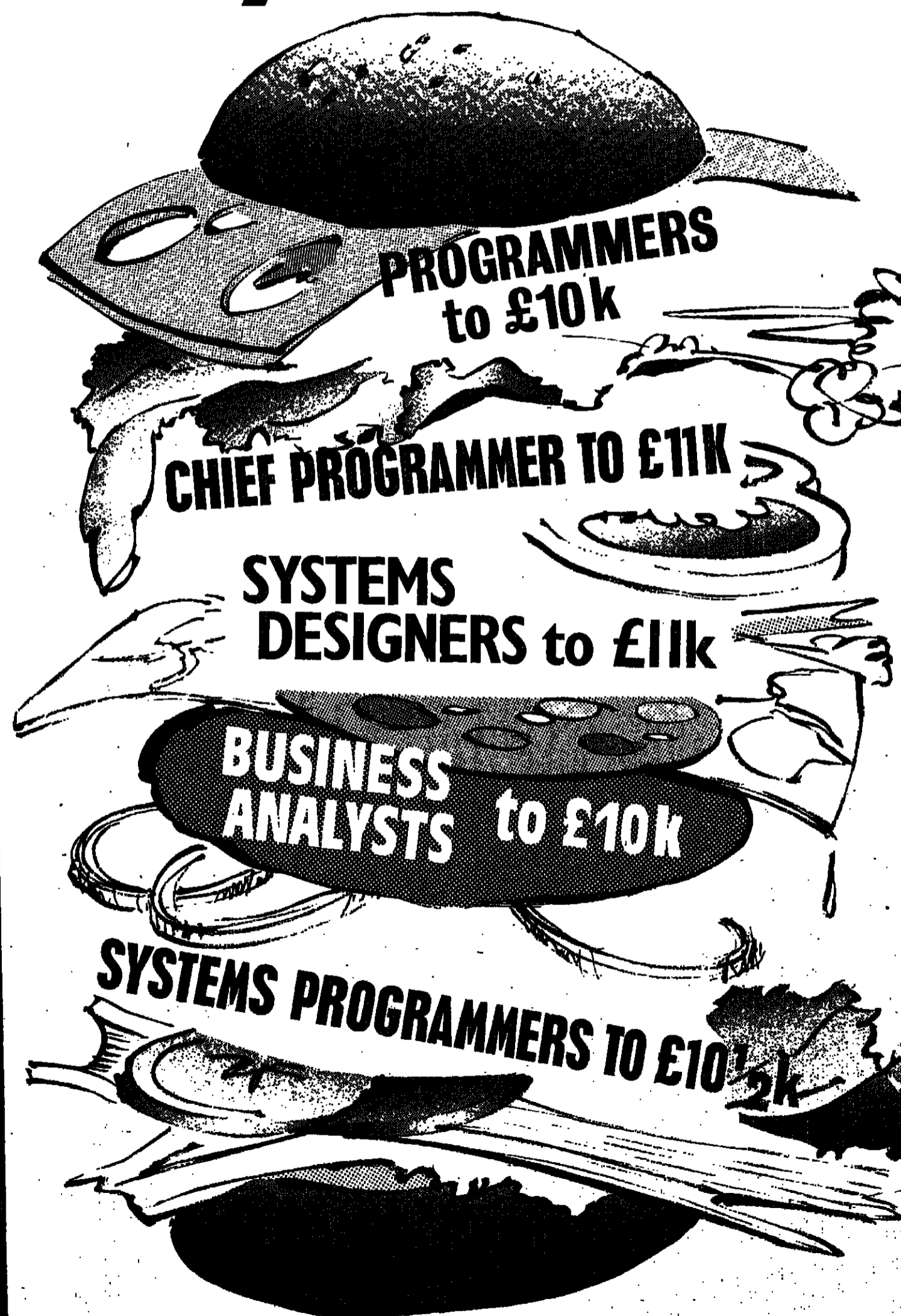
Apply soon for more details are available from the Department of Planning & Transportation, Trent Bridge House, Fox Road, West Bridgford, Nottingham NG2 6BJ. Tel: Nottingham (0533) 66555 ext. 316. Closing date 20th October 1980. Please quote ref. 14.

Nottinghamshire County Council

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

Try this for size!



DATA PROCESSING SPECIALISTS for Croydon

As the management and data services division of a multi-million pound group our client has world-wide responsibility for the data processing of an organisation who has led its field of commerce for over a century.

Currently using IBM 370's running under DOS/VS and VM, controlling a network which extends to Europe the installation is to upgrade its equipment to the latest IBM 4300 range. As an established user of CICS and Database techniques they will be consolidating their lead and introducing IBM 8100 technology to control the interface between word processing and data processing.

Productivity aids have been carefully evaluated resulting in the use of APL and on-line program development and an increase in the rate of system development.

To maintain their high level of service to the group additional data processing specialists are needed who will be given the opportunity to develop their skills whilst meeting user objectives.

RELISH: paid overtime, L.V.'s, free life assurance, pension and health scheme, sports and social facilities, six monthly reviews and generous holidays.

Telephone Diane Williamson on 01-637 9611 for more details

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

(3051)

SMR Sales & Marketing Recruiters Ltd

Victory House, 99 Regent Street, London W1R 7HB
A Sales and Marketing Services Company
London & Midlands

Sales Executives

Are you a manager who can sell or a seller who can manage?

— Either way, here is an exceptional 'ground floor' situation offering a unique opportunity for rapid advancement to senior management.

OUR CLIENT A major world-wide corporation already well established in the computing field; and now in the process of creating a completely new European operation, backed by massive financial resources and first class management.

THEIR PRODUCT Well proven over ten years in the USA to be a major computing force in industry commerce and distribution.

YOUR CAREER A unique opportunity to be part of the creation of a major new business enterprise, and with it the chance to prove your capabilities right up to the national management level.

THE REWARDS Truly achievable sales quotas offering unlimited earnings potential over the on-target figure of

£16,000 + company car

If you are an experienced hardware or services computer sales executive we would like to speak with you about this exceptional opportunity, based in

London

Please contact Alasdair Scott quoting reference THC/009. Tel: 01-734 9776

Tel: 01-734 9776

Midlands and North - Lichfield (05432) 56612
Answering Service after 6 pm and weekends

SALES TRAINING, MARKET RESEARCH, RECRUITMENT

ANALYST/PROGRAMMERS c.£7,000 Nottinghamshire

3 YRS. EXPERIENCE
A rapidly expanding computer division servicing a major commercial conglomerate requires Analyst/Programmers to join their progressive team developing new commercial systems for on-line applications. Current proposals include upgrading of now ICL 2900 series equipment running ultimately under the latest operating systems.

Successful candidates will ideally have 3 years' COBOL programming experience prior to development into analysis and should be prepared to work on their own initiative and have confidence to be involved in direct user contact. The Company, which is situated in rural Nottinghamshire, offers usual fringe benefits coupled with genuine opportunities for promotion.

Contact: Roger Carr Hagley 885136 (Evenings)

PROGRAMMERS To £8,500 Birmingham

Our Client, a leading major manufacturer, currently using the latest IBM hardware, is looking for Programmers with at least 3 years' COBOL experience. Work currently being undertaken is On-Line Real Time development. A knowledge of CICS/DLI would be an advantage, but is not essential. Opportunities to progress within the Organisation exist for the right applicants.

Ref. 5/664 Contact: Christine Pountney

ANALYST/PROGRAMMERS To £7,500 Birmingham

Programmers who have 2 years' plus COBOL experience and are looking for a move into Analysis would be ideal applicants for these positions. Our Client is looking for people who can work on their own, under pressure and be involved in a changeover of hardware to the latest IBM mainframes.

Financial and/or commercial applications experience would be preferable. Ref. 5/659 Contact: Christine Pountney

Blackwood Associates Recruitment Consultants

26 Waterloo Street, Birmingham B2 5TJ.
Telephone: 021-233 2921 (24 hr. service)

A Member of the CPS Group of Companies.

ANALYST/PROGRAMMERS Up to £8,000 Bristol

An established systems house within the Bristol area, is seeking a number of candidates with experience of Basic or Basic+ on DEC PDP11 equipment to join its expanding software department. Vacancies exist for both analyst/programmers and customer support staff who have at least two years' experience in a commercial environment.

Ref. W297 Contact: Hazel Fogglin

C. £7,000 PROGRAMMERS Wilts

A programmer with at least 2 years' experience of Assembler programming on IBM equipment is required by a client company in Wiltshire. The successful candidate will become involved in both commercial application programming and occasional systems programming. Relocation assistance will be given where necessary.

Ref. W288 Contact: Hazel Fogglin

PROGRAMMING PROJECT LEADER To £8,000 S. Staffs

An experienced and mature programmer is required, capable of dealing with users and management at all levels, to handle the development and implementation of a range of batch and real-time application both manufacturing and commercial. The position offers an excellent opportunity to develop and control a team of programmers in a well-organised and progressive company installing the latest hardware.

Ref. B959 Contact: Peter Bowen

SYSTEMS ANALYST To £8,000 Wolverhampton

Our client requires a business systems analyst who has a COBOL programming background to develop a range of systems on new hardware. Database and On-Line manufacturing systems are the first objectives for this challenging position.

Ref. B932 Contact: Peter Bowen

INTERVIEWS ANY TIME BETWEEN
9 a.m.-5.30 p.m. EVENINGS AND
WEEKENDS BY APPOINTMENT
WRITE - BLACKWOOD ASSOCIATES,
FREEPOST, BIRMINGHAM B2 4BR

Mini Computer Engineers

MIDDLE EAST

A rare opportunity has arisen for an experienced Engineer to join a very specialised systems house, who market their software as a total solution along with a major US minicomputer system. The successful applicant will transfer to this US company on their setting-up their branch office in Bahrain. The successful applicant will be a professional minicomputer engineer with some 3-5 years' experience, who will see this very much as a long-term career opportunity though not necessarily permanently in the Middle East. An excellent tax-free salary, company car, education grant and free accommodation in this most Westernised of the Middle Eastern states will be provided.

FOR A GENERAL DISCUSSION ON THIS EXCITING AND HIGHLY RESPONSIBLE POSITION WITH ONE OF THE WORLD'S LARGEST MINICOMPUTER COMPANIES TELEPHONE DOUG SNEDDON IN OUR LONDON OFFICE, QUOTING REF: DS21.

INSIGHT

INSIGHT LONDON

COMPUTER AND PROFESSIONAL RECRUITMENT CONSULTANTS

INSIGHT MARKETING & PERSONNEL CONSULTANTS LIMITED
London - 72-75 Marylebone High Street, London W1M 4AJ.
Tel: 01-486 5644
North - Austin House, Charlotte Street, Manchester 1.
Tel: 061-236 7026
International - Walden House, 32-33 Marylebone High Street, London
W1M 3PE. Tel: 01-486 7938
Ireland - 20 Upper Fitzwilliam Street, Dublin 2. Tel: 0001 766387

Recruitment



in Informatics

Microprocessor Engineers

Switzerland: Salaries to £16K

Our clients' Headquarters are located near Zurich. We are retained to recruit top calibre Microprocessor Software Development Engineers to join the company's permanent staff. Emphasis will be placed on technical achievement and in-depth experience in the areas of activity outlined below. A Bachelor or Masters Degree in Electronics, Electrical Engineering, Physics or Computer Science is a mandatory requirement. All candidates must offer four years' microprocessor software development expertise gained with a Manufacturer or High Technology Software Supplier. There is a preference for those fully familiar with Motorola 6800 or Intel 8085/8. German language course may be arranged but it is valuable in offer at least minimal language ability. Every assistance will be given in relocation including the provision of temporary hotel or rented accommodation. Ref: L/41/A

Mini Software Development

Beds./Camps: Salary to £10K

Our client is a highly respected Systems and Software Supplier having its Research and Development Facility in a most attractive East Anglian location. Current requirements are for Development Programmers offering a minimum of 18 months Basic or Assembler programming experience on any mini-computer or micro-processor. These positions will appeal equally to those with a scientific/academic computing background or commercially inclined Programmers. Offering a comprehensive range of in-house hardware, unrivalled development aids are available for ambitious, career-minded individuals. The salary and excellent ancillary benefits represent an outstanding opportunity for those keen to participate in "state-of-the-art" software and hardware projects. Interviews can be arranged both locally and in London Ref: L/41/B

Commercial Systems

Benelux: Salary to £15K

One of Britain's most successful, commercially orientated Systems and Software houses urgently requires Analyst/Programmers and Analysts for its Benelux operations. Whilst it is not necessary to have exposure to any particular hardware the Company does have a stated preference for candidates with experience of D.E.C.'s P.D.P. range and medium to large I.B.M. mainframes. Knowledge of the techniques associated with distributed processing is an advantage. Successful applicants will be required to have played a leading role in a project team developing and implementing at least one major on-line system in the banking, retail or manufacturing sector. As considerable client liaison is a feature of all positions, a reasonable command of French and/or Dutch is highly desirable. Ref: L/41/C

Pascal & ADA

Rural Oxfordshire: Salary to £11K

PASCAL & ADA will have a great future. If you want to participate in the realisation of their potential, please read on... Our client, an expanding Software/Systems Supplier is based on the edge of the Chilterns in an area of outstanding natural beauty. Current requirements are for Program Engineers and Designers who can offer a combination of academic achievement and practical exposure to both software and hardware orientated projects. Suitable candidates should have a real and demonstrable interest in PASCAL compiler development or have participated as a team member in the evaluation of ADA and similar hybrid languages. Interviews will be held in mid-October and offers seven days thereafter. Ref: L/41/D

CICS Programmers

Holland/Germany: Salary to £18K

A multinational organisation with offices throughout Europe and the USA has an urgent requirement for four Applications Programmers to work in their IBM 303X and 43XX installations in Holland and Germany. Suitable candidates should have developed and maintained an on-line, real-time system using CICS with DLI. However, those applicants with relevant experience using any other IBM compatible TP monitor should not be deterred from applying as training will be given. These positions represent an outstanding opportunity for career-minded individuals to enhance their technical skills whilst at the same time enjoying the diverse cultural benefits of another society. Ref: L/41/E

Micro Business Systems

W-Home Counties: Salary to £10K

A leading supplier of micro-based business systems urgently requires Programmers to both develop applications packages and assist with their installation on customer site. Fluency in Basic or Assembler is essential and will preferably have been gained on any leading mini or micro-computer. Applicants who are, additionally, able to demonstrate a knowledge of Pascal will be especially welcome. The company offers outstanding career opportunities in a rapidly expanding market sector and, by virtue of its extensive client base, exposure to a wide variety of applications. Ref: L/41/F

Software Trainers

Hampshire Coast: Salary to £10.5K

A leading manufacturer of mini-computers for both scientific and technical applications seeks several Software Trainers and Lecturers for its recently established Hampshire office. Work content will include the staff training of both existing and prospective customers in D.P. techniques and the Company's Software products. Education takes the form of product demonstrations, seminars, workshops and of course "on-the-job" tuition. The development of software courses in areas not so far covered by the Company will form an essential and integral part of the post. Our client prefers candidates who have previous programming experience in either BASIC or ASSEMBLER. Previous lecturing or training experience is an obvious asset. Ref: L/41/G

Logistix, 10 Grenville Place London SW7 4RW

01-373 3063



Telex: 28800

(3037)

PROJECT LEADERS AND SYSTEMS ANALYSTS

Does a bright,
fruitful future
fit into your programme?

South Africa is gold country. We're in the middle of a boom period - which looks like going strong for some time to come - and consequently we're maintaining our reputation as a country filled with opportunity. It's a land of low taxation, an incredibly high standard of living and equally low cost of living. Interested? Keep going...

Just south of Durban, the Riviera of South Africa, lies the sophisticated Motor Assemblies plant, where Toyotas, Renaults and Rinos trucks are manufactured. We're expanding, and we need your expertise and experience to help us meet our projected future - and advance beyond it. The people we are looking for must have at least 4 years' D.P. experience and a knowledge of COBOL. A background of Burroughs computers and the RJE operation would be an advantage. We're prepared to offer generous relocation assistance in your move to our country: assisted passage, a one month salary grant, one month's accommodation in a hotel until you've found your feet. In addition, you'll receive a very attractive salary, annual bonus, excellent pension, medical aid and insurance schemes and leave car facilities. Oh yes... if your wife wants to pay a visit to the UK after 18 months, we'll supply a free round-trip air ticket. Please write, enclosing full career details, to: CHRIS MORZE, Lindsay Smith Recruitment, 62 Baker Street, London W1M 1DL.

**Motor Assemblies
Limited**

PLYMOUTH
POLYTECHNIC
Faculty of Technology

Department of
Mathematics, Statistics &
Computing

LECTURER II/
SENIOR LECTURER
in Computing/Information
Science

Applications are invited for the above post which is newly created in support of the department's developing teaching and research interests, in the application of computer technology to the processing of information.

Salary:
SENIOR LECTURER
£8062-£11,298
LECTURER II £8012-
£9702
Application forms, to be returned by Friday, 31st October, 1980, can be obtained with further particulars from the Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA.

UNIST
University of Wales

THE WELSH SCHOOL OF
ARCHITECTURE
RESEARCH
ASSISTANT

to work on the further development and implementation of a finite difference thermal model for predicting the energy efficiency of buildings; candidates with experience in computer science or electronics preferred.
Salary: Range 18 £4,786-£0,986.
Requests (quoting Ref: CV) for details and application form to Personnel Section (Academic) UNIST, Cardiff CF1 3NU.
Closing date: 31st October 1980.

Targa SENIOR RECRUITMENT CONSULTANT

£12,000 + CAR

Targa Computer Services, which was established in late 1978, is part of a Recruitment group of companies. We are currently looking for 2 Senior Recruitment Consultants to expand and develop further the recruitment services for the Senior appointments of the computing industry.

Ideally you should be over 25 with at least 3 years' computer experience, to include either Systems Analysis or Programming knowledge. You should have the ability to advise clients on salary levels; job identification and specification; and advertising, thereby compiling a client profile for suitable applicants. Additionally, you must be able to assess people and to advise them on their career development.

We offer a substantial benefits package including a basic salary up to £5000 plus an excellent commission structure, which is guaranteed for the first 3 months. There are also two incentive bonus schemes plus a company car after 6 months.

Please contact M. Dauncey on 01-439 6749 or alternatively send him your detailed CV.

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REAL TIME SYSTEMS—DEC BASED

HANTS/BERKS/SURREY BORDERS

An international leader in the development and manufacture of real-time industrial and military systems has career openings for a software manager and team leaders.

SOFTWARE MANAGER c. £13,000 **TEAM LEADERS £8,000-£10,500**

For this crucial appointment you will need extensive software systems experience on DEC equipment using CORAL or MACRO II together with project control experience including the meeting of deadlines and the controlling of costs. You will have responsibility for about twenty-five software professionals and thus you need to be a good motivator and team manager. Your applications background could be in industrial process control, simulation or defence systems.

Reporting to the Software Manager you will lead a small team of about four software engineers. You should be a numerate graduate with experience in developing real-time software systems, preferably in MACRO II or CORAL on PDP 11s (RSX11M) in application areas such as industrial process control, simulation, defence systems or similar. It should particularly appeal to you if you feel ready to extend your technical background into a leadership role.

The company is accessibly situated near the M3 and offers attractive benefits including a non-contributory pension and life assurance scheme and relocation allowance where appropriate.

For further information, please contact MARK TRENS quoting reference CW/0910/4.

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TELEPHONE: 01-353 7141 (24 HOURS)

Hutton

SPECIALIST RECRUITMENT CONSULTANTS

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DOS/VS/CICS/COBOL

To £11,000 p.a.

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NEW DEVELOPMENT OF ON-LINE TRANSACTION PROCESSING AND ADVANCED TEXT HANDLING ON IBM 4331 WITH INTEGRATED WORD PROCESSING ON IBM 3730.

If you are capable of learning quickly and taking the responsibility of operating under minimum supervision, you will enjoy working for this well-known City firm. The opportunities for technical and career development are excellent and you will be involved in new systems design and program specification.

CONTACT: BOB BOWER, ADVISING DIRECTOR

Ref. CW 0910/1

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CITY

The London office of an international bank will shortly be upgrading from a Burroughs L9000 to an HP3000. This has created an opening for a Programmer/Analyst to contribute creatively to the modifying of existing systems and the designing of new systems. The responsibility is considerable and thus we are looking for a person with initiative, a professional approach and ability to work largely unsupervised. The main requirement is at least three years' RPGII programming experience, preferably gained in a banking environment. Knowledge of COBOL would be useful but is not essential.

CONTACT: MARK IRENS, ADVISING DIRECTOR

Ref. CW 0910/2

HUTTON EXECUTIVE SELECTION LTD.
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COMMUNICATIONS SOFTWARE SPECIALIST

WORD PROCESSING SYSTEMS
CIRCA £12K PLUS CAR
CENTRAL LONDON BASED

THE FOLLOWING EXPERTISE IS REQUIRED:
KNOWLEDGE OF IBM/ICL COMMUNICATIONS PROTOCOLS.
ABILITY TO WRITE AND AMEND COMMS. PACKAGES THEREFORE FLUENT IN ASSEMBLER LEVEL CODING.
PRE AND POST SALES CUSTOMER CONTACT.
KNOWLEDGE OF GPO DATEL SERVICES.
MANAGEMENT EXPERIENCE OR POTENTIAL.

An excellent and rare opportunity has evolved at our Clients, a well-known and respected mini-computer and word processing systems manufacturer. They urgently require a sound communications software expert to take control of customers' teleprocessing requirements and to help modify existing communication packages. The position has enormous potential and management is a natural and imminent progression.

CONTACT BOB BOWER, ADVISING DIRECTOR

Ref. CW 0910/3

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TELEPHONE: 01-353 7141 (24 HOURS)

NOTICE — Local and London Commuters —

All Change to a New Line at CHELMSFORD

We are looking for two people to form the systems programming section of our clients new installation. This is to be a 2MB 4341, operating under OS/VS1 and using VM/CMS for on-line programming in PL/1. The company has a household name, and is a member of one of the leading U.K. groups.

CHIEF SYSTEMS PROGRAMMER
Experience must include systems programming, OS/VS1 and IBM Assembler. In addition VM and PL/1 would be advantageous.

SENIOR SYSTEMS PROGRAMMER
Experience of Sysgen and of working in an operating systems environment.

CHIEF SYSTEMS PROGRAMMER
c. £9,000

SENIOR SYSTEMS PROGRAMMER
c. £7,500

IBM 4341

OS/VS1

VM/CMS

ASSEMBLER

Please telephone (24 hour answer service) or write to apply. Quote Ref: CW154-J

CAPP ASSOCIATES
Computer and Professional Personnel Consultants
01-686 9693 AMP House, Dingwall Road, CROYDON CR9 6XA

The Lockheed glossary of DP terminology

User Friendly (u.f.) A good way to describe Lockheed's brand new, air-conditioned DP Centre in Riyadh, Saudi Arabia.

Timeslice (n.abs.) A two-year assignment with Lockheed.

Checksum (n.) A substantial configuration of digits payable monthly (with six monthly bonuses) during a timeslice (q.v.).

Access (n.s.v.r.) Strictly limited to experienced Programmer/Analysts.

Password (n.) Typical passwords include COBOL, DOS/VS, CICS and POWER. Access is dependent on programmer/analyst possessing the right passwords.

Peripherals (n.all.) Closely and functionally related to checksum. Currently, peripherals include free food and laundry, free medical and life insurance.

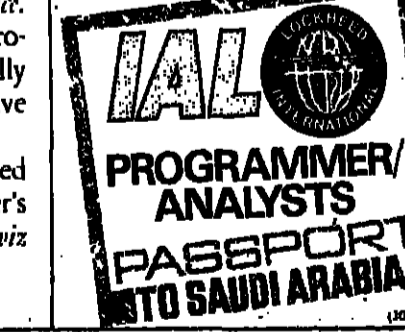
Mainframe (n.) LEC Series 3 System, updating, now to IBM 4331.

Downtime (n.) Six downtime periods occur in every timeslice. During downtimes, Programmer/Analysts usually return to the UK, and receive free return flights.

Suite (n.all.) Usually applied to an Analyst/Programmer's bachelor accommodation (viz peripherals).

Address, real (n.) The Senior Recruitment Exec. (Lockheed), IAL, Personnel Consultancy, Aeradio House, Hayes Road, Southall, Middlesex. Quote numeric L294.

Conversion mode (n.) An alternative to address, real. The mode may be entered by phoning 01-574 5000.



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- Unique Opportunity** — Call our service engineer consultant today for details of — Company share scheme BUPA N/C pension, overtime, call-out 2 litre car plus £8,000 and more if you have minicomputer experience.

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04865 3014 (after 7.30 p.m.)
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Leicestershire

DEPARTMENT OF PLANNING AND TRANSPORTATION

ANALYST/PROGRAMMER (Engineering and Process Control Systems)

Salary within scale £6,636 to £8,097 per annum (annual pay award pending)

This post is in a team responsible for Urban Traffic Control software and for a range of main frame non-financial applications. The work is a mixture of analysis, programming (Fortran 77 and assembler) and user support. Hardware used includes a large Univac 1100/11, Honeywell mini computers, terminals, digitiser and digital plotter. Relocation expenses up to £1650 plus lodging allowance in appropriate circumstances. Temporary housing may be available.

Application forms and further details available from the Director of Planning and Transportation, County Hall, Glenfield, Leicester LE3 8RJ. Telephone Leicester (0533) 871313, Ext. 7422.
Closing date: Monday, 27th October, 1980.

H 66 HOLLAND 2+ years' Fortran on Honeywell Level 66 equipment (preferably under GICCS) urgently needed by London-based Systems House for important, long-term project in Holland. Relocation offered. Initial interview in London. c £17K	PDP 11 BASIC Programmer/Analyst with 2+ years' experience in BASIC required by leading Financial Institution for newly-acquired DEC-based system. Must be self-starter, prepared to work at City and N.E. London offices (possible relocation assistance). c £8K + Mortgage	REAL-TIME MINIS Programmers, Analysts, System Designers required by UK Software House for numerous real-time projects on minis currently being undertaken in the UK and Holland. Applications chiefly technical/scientific. £ neg.
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MICROS BERKS. Senior Engineers with 3+ years' micro experience preferably with Electrical/Electronic Engineering degree, wanted for design and development work with UK subsidiary of Micro manufacturer. Of special interest is experience in firmware development and digital and analogue circuit design. c £10K	SYSTEMS PROGRAMMER 1-2 years' Systems Software in Assembler on Minis plus CORAL for design, development and providing technical support to Dutch client of Herts-based Mini manufacturer. Degree preferred, ability to work alone effectively essential. Travel to Holland required. c £8K
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Mini & Micro Holland: Real-Time Systems

An International Systems/Manufacturing Group in Holland is seeking to expand its capabilities by recruiting additional personnel experienced in the mini/micro field. The Company is well established and has a high reputation in the scientific/technical application areas.

The requirement is for Programmers, Analysts, Designers and Consultants. Necessary qualifications for these technically demanding and challenging positions are a background in Mini Assembler or Micro Systems (minimum 2 years) in a non-commercial environment. A relevant degree (e.g. Computer Science, Elec. Engineering or similar) is preferred, although experience in lieu will be taken into account.

Specialist knowledge in any of the following is of particular interest: Message Switching, Process Control, Simulation, Networks, Communications, Banking Systems.

Generous family relocation packages offered plus resettlement advance, 8% holiday bonus, comprehensive medical and pension schemes and house purchase assistance.

Salaries £10-18K

MINIS MIDDX Analyst/Programmer and Project Leaders wanted for Development Division of leading Mini manufacturer. Assembler and at least one high level language required, knowledge of interface and Emulators desirable. Excellent long-term opportunities. to £11K	CAD S/W ENG Software Engineers and Designers with experience of technical and CAD software on DEC, Prime or similar equipment required for development work on CAD projects with this East Anglian client. Knowledge of Fortran and Assembler preferred. c £8.5K	DB/DC EUROPE Analyst/Programmer and Designers, with in-depth experience of IMS, DL/I, TOTAL, CICS or similar DB/DC experience (technical not managerial) urgently sought. By European offices of international Systems House for development work. to £16K
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IBM ASSEMBLER Systems Programmers with 4+ years' experience in BAL and acquaintance with compiler writing, plus MVS, VS1 or VS2 wanted by advanced Computer manufacturer with UK base in Midlands. Office in North Hampshire, occasional trips to German subsidiary may be required. £9-12K	CORAL RTL 2 Programmers and Programmer/Analysts who have real-time experience gained in a defence, telecomms, or industrial environment required by Systems House. Machine knowledge to include PDP11s (under RSX-11M), GEC 4000 or Minis. Offices are in North Hampshire, occasional trips to German subsidiary may be required. £6-10K
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SOFTWARE ENGINEERS / DESIGNERS

£11,000+ HERTS / BEDS.

Our Client, a young and rapidly expanding software house currently require software designers in the scientific and technical fields.

The ideal candidates will have a degree in Computer Science coupled with a sound background with either Mini or Micro experience. Extensive knowledge of Assembler, Coral and RTL-2 is of paramount importance.

In return we can offer you an attractive benefits package together with an informal, flexible management structure.

SENIOR SOFTWARE PROGRAMMER

£9,000+ HERTFORDSHIRE

Our client, one of the world leaders in the field of manufacturing and supplying the Process Industries is currently seeking a Senior Software Standards Programmer to head up their new Software Standards Section.

The ideal candidate will have a degree or equivalent in a computing or engineering discipline together with around five years Software experience some of which shall have been gained in a Standards or Maintenance role. An in-depth knowledge of Assembler is highly desirable.

Age is immaterial to a candidate who can show leadership to a team of six as well as being able to give a professional image to visiting clients from both the UK and overseas.

To find out more about the excellent benefits packages please contact Colin Maslen on (0727) 35113 or write to him at: Blue Arrow Executive Selection, 2 Holywell Hill, St. Albans, Herts.

Blue Arrow
Executive Selection

SYSTEMS PROGRAMMER

(£3400-£3801 Pay Award Pending)

DEC large and small systems (2050/
PDP11/40)

A recently created post in the systems team of the Polytechnic offers opportunities in the support of online teaching and graphics systems. Candidates should have a large knowledge of assembly language techniques and at least one high-level language.

Facilities include terminals at each desk and modern computing equipment. Opportunities exist for staff to work for higher degree and professional qualifications.

Nottingham offers reasonable housing costs — a 3 bedroom semi-detached house for approximately £15,000. Some assistance with removal costs may be given.

Further details and form of application from Assistant Director (Administration), Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date: 20th October, 1980.

TRENT POLYTECHNIC NOTTINGHAM

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Middle East

IBM — IMS
DB/DC MVS
TO \$60,000

Tax free packages + accommodation, travel, etc.

Consultants, analysts, applications and Systems programmers and a JCL specialist are required for ten diff. projects. Large IBM exp. with one or more of the following is essential: PL1, COBOL, MARK IV DLI, IMS DB-DC, TSO, ACF, JCL.

For further details please contact Roger Allington, quoting FL28

OCC Contracts Personnel
1 Shearwater Park
Hull, HU4 9NX
Tel. 0447-2299 (evening)

04427-2299

04427-2299

REAL-TIME SOFTWARE DESIGN

London Up to £12,000

Our client is an established supplier of quality real-time and other computer bureau services to several blue chip organisations.

They are a technically adventurous organisation, having designed their own database and real-time systems. This has meant that they have a much more interesting technical section than is usual in a commercial environment. The result is an opportunity for graduates to be involved with real-time systems, database and data communications software.

A major enhancement of the twin CPU's together with a significant expansion of the intelligent terminal network will give further opportunity for the group (of four people) to develop their skills and give full job satisfaction.

If you have substantial system software experience (perhaps five years or more) and are seeking a technical challenge in a company that provides significant benefits in addition to salary, and has offices in an interesting part of Central London close to tubes and with easy access to mainline stations, then ring us, in confidence, quoting reference 315. (Messages will be recorded after hours.)



EDP SYSTEMS 01.637
52-53 Margaret St. London W1F 7FF 5796

MINI-SALES

Basic £8,000 + £10,000 On Quota £17,000

TWO-LITRE CAR

Our client, a major International Organisation who have been established in the U.K. since 1969 and HAS OVER 1,200 SYSTEMS INSTALLED (stand alone and distributed data processing).

EMPLOYS OVER 850 PEOPLE AT 10 LOCATIONS.

Has a turnover of £17m. +

They are offering outstanding opportunities to ambitious Sales Executives looking to take part in their aggressive expansion plans throughout the U.K.

Are you ready for the challenge?

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MICRO-SALES

Basic £8,000+ On Quota £15,000+

PRESTIGE COMPANY CAR

This major U.S. Corporation, well-established and committed to expansion throughout Europe have recently launched their New Product range in the U.K.

This is a unique opportunity to be part of a Major New Business Enterprise and the chance to prove your capabilities through sales to future management.

Ref. SR5018

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0932 41321-4

Microelectronics in Education Programme

Applications are invited for two posts on the small management team being established to run the Government's Microelectronics in Education Programme, which will consist of a range of coordinated projects commissioned through national bodies, local organisations and individual schools and colleges. Both appointments will be for a fixed term, ending on 31 March 1984. Secondment from existing posts will be possible. The Programme Team will operate from offices in Newcastle upon Tyne.

MANAGER (COMPUTING)

To have particular responsibility for projects dealing with:

- the development of software
- the development of computer-based learning materials
- computer appreciation in schools

The Team will look at the Manager (Computing) for technical advice on computing. A requirement of the post will be to visit projects throughout England, Wales and Northern Ireland.

Applicants will need both educational and computing experience. Salary on a scale from £7360 to £9068 (Administrative Officer).

MANAGER (TECHNOLOGY)

To have particular responsibility for projects dealing with:

- the teaching of electronics, control technology and associated topics
- the development of teaching materials dealing with the technology of microelectronics

The Team will also look to the Manager (Technology) for technical advice on microelectronics. A requirement of the post will be to visit projects throughout England, Wales and Northern Ireland.

Applicants will need both educational and technical experience. Salary on a scale from £10440 to £17150 (Administrative Assistant).

Applicants for both posts may ask for assistance with removal expenses.

Closing date for applications: 31 October, 1980.

Fuller details for both posts are available from:

The Office Manager, Council for Educational Technology, 3 Devonshire Street, London W1N 2BA.

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PROJECT LEADER London
Good systems analysis experience and ability to lead small development team. 10-15 years experience of JCL hardware and software.

PROGRAMMER London
Programmer with about 2 years PL/1 experience in a commercial environment. IBM hardware.

COBOL PROGRAMMER London
COBOL programmer with about 2 years experience in a commercial environment. Good prospects and opportunity for further study. Reasonable package. No experience necessary at low price.

Many more interesting positions
COMPUTER SYSTEMS & PERSONNEL
49 Parkway Road, London NW2

Excellent Contract Opportunities

The following are a selection of our current contract assignments. However, we have a continuous requirement for skills and dedicated contract professionals, so please make sure you are on our Register.

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UNIVAC 1100/ DMS & TIP	DATABASE DESIGNER	N. WEST
BANKING	ANALYSTS	CENTRAL LONDON
HP 3000	ANALYST/PROGRAMMERS	LONDON
4300 SERIES	SYSTEMS PROGRAMMER	S. LONDON
UNIVAC	ANALYST/PROGRAMMERS	ESSEX
COBOL/CICS/end/or DLI EXPERIENCE	ANALYSTS DESIGNERS AND PROGRAMMERS	N. WEST
REDIFON R650	SENIOR PROGRAMMERS	LONDON
IBM/ICL 2900 COBOL	PROGRAMMERS	NIGERIA
COBOL/DOS	ANALYST/PROGRAMMERS	GERMANY
IBM/ASSEMBLER/DOS	ANALYST/PROGRAMMER	U.S.A.
IBM/DOS/VS/CICS/VSAM	SYSTEMS PROGRAMMER	U.S.A.
CICS/IMS DB	INSURANCE ANALYSTS	U.S.A.
BANKING — LETTER OF CREDIT EXPERIENCE	ANALYST/PROGRAMMER	U.S.A.



For more information telephone
Alan King
Tangent Computer Service
102/106 South Street
Romford, Essex.
Tel. Romford 750201

(3099)



- * Geology and Mining
- * Computer Graphics
- * Economic Evaluation
- * Project Information
- * Engineering and Metallurgical Design

PROGRAMMER/SENIOR PROGRAMMER (FORTRAN)

London

Seltrust Engineering Limited, a wholly-owned subsidiary of the British mining house, Selection Trust Limited, provides mining, metallurgical and engineering design and consulting services on a worldwide basis. As part of the support for these services the company has developed the ORPHEUS mine design system which is now commercially available through the satellite-based GEISCO Mark III/GCOS network.

We seek a Programmer/Senior Programmer to join the small professional team which is responsible for programming and all related activities concerned with the support and further development of the ORPHEUS system. The successful candidate will work closely with users and opportunities for short overseas visits may arise.

Applicants should have at least 2 years' FORTRAN experience, preferably in an industrial environment. Previous experience with graphics, mini-computers or the mining industry would be an advantage.

The Computing Department is located at our London head office and its work reflects the wide spectrum of the company's activities. A PDP 11/34 computer and remote batch terminal are used to communicate with a number of bureau services.

We offer an attractive salary supported by excellent working conditions and benefits. For an application form, please contact:

SELTRUST ENGINEERING LIMITED

Mary Powell, Personnel Officer,
Seltrust Engineering Limited,
Fleet House,
57/61 Clerkenwell Road,
London EC1M 5SP.
Tel: 01-250 0011.

(3109)

JBA

DEC Sales Executives

Saudi Arabia c. \$20,000 package Tax free + car + accom.

We have been retained by a large commercial organisation, who are the distributors for DEC systems in Saudi Arabia, to recruit Sales Executives to work from their Jeddah offices.

Applicants should have at least five years experience on Digital equipment together with a proven sales record, preferably in technical, government or industrial markets. Management abilities (or potential) could assist in the Company's development. A knowledge of Arabic would obviously be an advantage.

Contact: Jim Baker

MIDDLE EAST

Project Leaders and Systems Programmers

c. £15,000 Tax Free + Accom.

One of the leading Consultancies in the Gulf area wish to strengthen several of their teams covering diverse application areas. Commercial Project Leaders with very strong IBM 370 and COBOL backgrounds are required. You will have a good design record and possibly exposure to CICS and on-line applications.

Systems Programmers with at least 2 years CICS experience plus in depth knowledge of the OS operating system are required to support and maintain client sites. Applicants with bachelor status preferred, but those with no more than two children will be equally considered.

Contact: Brian Postles

Sales Consultants

All areas £15k+ package plus car

A well established supplier of small business systems is about to launch a new proven product onto the U.K. market and now requires Sales Consultants to take responsibility for various territories in this country.

Candidates must have a proven sales record preferably in the small turnkey commercial market and be capable of undertaking d.p. studies for prospective customers.

Contact: David Hendry

Systems Analyst

France/London £10,000 +

This international manufacturing organisation is seeking an experienced person to join their team at a senior level, and assist with the installation of IBM System 34's. Systems have already been installed in London and Paris, with plans for further development on the continent. Although the base is London, it is expected that approximately 75% of the work will take place in Europe, therefore, a good command of German and/or French is essential.

The appointee will be expected to have at least three years in an IBM environment encompassing small systems, RPG II and the development of commercial and manufacturing applications.

Good opportunities exist within the company for career advancement, and naturally all expenses incurred whilst travelling will be covered.

Contact: Janet Chivers

System Software Designers

Sussex to £9,500

This is an exceptional opportunity to join the Software Development team of a British-owned mini computer manufacturer who are already market leaders in the UK, East/West Europe and Middle East. Their plans to market in the Far East are well underway. System software specialists are required to assist with the on-going development of new software products.

Successful candidates will have extensive Assembler programming experience which should have been applied in the areas of transaction processing, compilers, operating systems or communications using mini computers.

Training is offered to IBM systems programmers who wish to make the transition from main frames to minis.

In addition to the excellent prospects available for ambitious people, the company offers a substantial benefits package including full assistance with relocation.

Contact: Margaret Stevens

Analyst/Programmer

London up to \$9,500

A rapidly expanding oil exploration and production company with interests in the North Sea, are about to install a PRIME 250 computer and they require an Analyst/Programmer with relevant experience to assume responsibility for some of the work.

The initial development work will include accounting and financial modelling although this will go on to economic modelling, seismic data analysis and mapping, oil well information and log analysis.

Ideally, applicants will be graduates although this is not essential. They must have good knowledge of FORTRAN and/or BASIC with solid experience in business or technical information systems. Knowledge of PRIME hardware and software would, of course, be advantageous.

Contact: David Hendry

Technical Programmers

City £9,000 + Benefits

Our client, a well established world wide organisation, which is primarily involved in shipping, but has many other diverse interests within the petro-chemical industry, wishes to recruit experienced FORTRAN Programmers to work within the areas of numerical analysis, computer-aided design and interactive graphics.

Candidates must have a good degree in Computing Science, Mathematics, Engineering or other scientific subjects and should have a minimum of two years post-graduate scientific programming preferably on IBM or Hewlett-Packard hardware. Some structural or hydro dynamic application experience would be useful.

Excellent opportunity to progress in an interesting and professional environment.

Contact: Isobel Bruce

Analyst/Programmer

London £ commensurate with experience

This is an excellent opportunity to join a well established company, which is in the process of installing two PDP11/70's, and be involved in the development of unusual financial systems, concerned with the commodity world.

Ideal experience would be two years in a PDP environment using Basic+, with involvement in the development or enhancement of one major system.

The company plans are extensive in various areas including a data communications link with European offices, plus an on-line system into one of London's largest trading markets, therefore, they can offer good career prospects coupled with a generous salary, annual bonus and other usual fringe benefits.

Contact: Janet Chivers

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.

(3069)

FURTHER OPPORTUNITIES WITH TANGENT

TANGENT COMPUTER SERVICES is a successful Software Support organisation with diverse UK and International activities. Expansion in both our UK and USA companies is such that once again we must augment our management team with:

- ★ **CONTRACTS MANAGER — (UK Assignments)** ★
- ★ **CONTRACTS MANAGER — (USA Assignments)** ★

We are looking for people with sufficient DP experience, initiative and situation management skills to be responsible for the selection and administration of both permanent and contract staff.

Applicants should have good communication skills, maturity to accept full responsibility and the ability to work independently.

Both positions are located at our UK office and it is expected that some travel will be involved.

An appropriate salary will be offered to the successful applicants.

Applications will be treated in the strictest confidence and should be addressed to: —



Alan King
(General Manager)
TANGENT COMPUTER SERVICES
102/106 South Street
Romford, Essex RM1 1EX

Cambridge Consultants Limited is one of the UK's leading contract R & D organisations working for clients in fields such as computer software and hardware, electronics, printing systems, mechanical engineering, manufacturing technology and physics.

SENIOR SOFTWARE ENGINEER

We are looking for a Senior Software Engineer with project leadership experience or management potential to play a major part in the development of our Computer Software Group.

MINI/MICROS REAL TIME

A background of real-time programming on minis and microprocessors would be very useful, but primarily we need someone with several years experience in modern software methods and techniques, and who wishes to expand into commercial and managerial areas whilst still pursuing a highly technical career.

VARIED WORK

The work will involve participation in the development of new business, contact with clients, preparation of proposals and quotations, and leading and working on projects often involving engineers from several disciplines. Projects may include, for example, microprocessor control of machine tools, vehicle navigation systems, satellite communications, image processing, or system software.

SALARY TO £11K

Starting salary will be negotiable to £11,000 and we offer a range of additional benefits including profit share, share purchase scheme, and flexible working hours.

CAMBRIDGE

Our staff numbers about 150 and the company is situated in pleasant surroundings just north of Cambridge.

Cambridge Consultants

If you would like to find out more please contact
Janet Hales, Personnel Officer, Cambridge Consultants Limited,
Science Park, Milton Road, Cambridge CB4 4DW.
Telephone 0223 358855

NOTICE — Local and London Commuters —

All Change to a New Line at CHELMSFORD

We are looking for two people to form the systems programming section of our clients new installation. This is to be a 2MB 4341, operating under OS/VS1 and using VM/CMS for on-line programming in PL/1. The company has a household name, and is a member of one of the leading U.K. groups.

CHIEF SYSTEMS PROGRAMMER

Experience must include systems programming, OS/VS1 and IBM Assembler. In addition VM and PL/1 would be advantageous.

SENIOR SYSTEMS PROGRAMMER

Experience of Sysgen and of working in an operating systems environment.

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(3029)

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A new post has been created within the Administration for a suitably experienced Analyst/Programmer. Candidates should have considerable programming experience in COBOL plus recent involvement in Systems Analysis and Design. A good honours degree is desirable.

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Salary will be in accordance with the Other Related Scales 18 L4/45-£8085 or 1A £6505-£8585 (both under review) commensurate with qualifications and experience.

Applications should be sent to the University Secretary, University of Stirling, Stirling FK9 4LA, together with the names of two referees by 31.10.80, from whom further particulars are available. (Tel. Stirling 3171 ext. 2314).

(3108)

UNIVERSITY OF SALFORD COMPUTING LIBRARY**Senior Computing Officer/ Computing Officer**

A computer based special project for three years has been established to produce a software package for transferring jobs between online machines using the recently defined Job Transfer Protocol standard. Implementation will be produced for PRIME and ICL machines.

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(3089)

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(3094)

THE SALES BIT

Calculation of redundancy payments

LAST week I wrote about the definition of redundancy, the implications of being offered alternative employment and the implications of redundancy as a result of change of ownership.

This week I would like to discuss redundancy payments and how they are calculated, plus a few related points.

Notice Period

It is possible for an employee to leave his job voluntarily during the notice period without losing his rights to redundancy payment, provided he does so with the formal consent of the employer. There is also the right of appeal to the industrial tribunal if the employer's consent is unreasonably withheld.

If, however, an employee is dismissed for misconduct while under notice for redundancy, there is a right of appeal to the industrial tribunal which may grant the redundancy in full, in part, or not at all, according to the circumstances involved.

Industrial disputes do not affect entitlement to payment, but the time spent on strike is not included in determining entitlement to redundancy payment.

Payments

The cost to the employer of making redundancy payments is not as great as the typical employee might believe.

The Department of Employment is able to give the employer a rebate of 41% on any redundancy payment made if prior notice of redundancy is given via forms RP1 and RP2.

The scale of compensation for redundancy payments varies according to age-group and operates as follows:
● 1½ weeks' pay for each complete year of employment during which the employee was aged 41 to 64 inclusive for men and 41 to 39 inclusive for women.

● 1 week for each complete year of employment during which the employee was 22 to 40 inclusive.
● ½ week's pay for each complete year in which the employee was aged 18 to 21.

No compensation is payable for a fraction of a year within the age group concerned, but any excess may be added to the age-group below for accumulated reckoning. The ceiling for the calculation of "one week's pay" is currently £120. Up to January, 1980, the amount was £110.

Minimum

There is, however, a minimum qualification period for redundancy payment of two years' continuous service which comes into effect only after an employee reaches the age of 18. (Happy days!)

There is also a maximum redundancy calculation period of 20 years, which means that the maximum redundancy

payment under the scheme is £3,600, ie 20 x 1½ weeks. Anything beyond this must be at the discretion of the employer. (This, by the way, should not be confused with compensation for unfair dismissal, which I will deal with at a later date.)

Two final points on employee rights:
A redundancy payment cannot be claimed later than six months after the date of termination of employment, unless the matter has already been referred to an industrial tribunal, which in turn can allow a further six months for such a claim to be made.

Employees do not have to pay tax on redundancy payments which they receive in accordance with the Employment Protection Act.

Shock

I hope you find this information useful. It is rather heavy, but from one who has experienced the shock of suddenly finding himself on the dole, let me assure you that it is essential for every employee to know his and her rights in this respect.

Next week I shall be writing about dismissal as opposed to redundancy. The reference source for all of the information contained in this series of articles on the Employment Protection Act is Crum's Reference Book for Employers.

TRADER**CONFERENCES****State of the Art Review**

Infotech's State of the Art Review '80 will be held in London from November 26-28. It is designed for senior data processing people and explores all areas of computing. Events include sessions on future systems, software life cycle and the information industry. Further information is available from Maurice Nicholas, Infotech, Nicholson House, Maidenhead, Berks. Tel: (0628) 39101.

The Viewdata Exhibition for Professional and Business People will be held at the West Centre Hotel, Lillie Road, London from October 29-31. The scope of the exhibition has been expanded to include more business personnel, and exhibits will include editing equipment, monitors and user terminals, peripherals, accessories, publications and semiconductors. AVIP will hold its conference during the show. It is organised by IPC Exhibitions, and further information can be obtained from IPC Exhibitions, 40 Bowling Green Lane, London EC1R 0NE. Tel: 01-837 3636.

The fifth International Conference on Pattern Recognition, sponsored by the IEEE Computer Society and the International Association on Pattern Recognition, will be held at the Kona Hotel, Miami Beach, Florida, from December 1-4. For the preliminary program and registration information, write to Pattern Recognition Conference, Post Office Box 639, Silver Spring, Maryland 20901, US.

Puzzle Answer

THE key to a speed solution here is the fact that 1,000,000,000 equals 10⁹. So, since 10 equals 2 x 5, one thousand million must equal (2 x 5)⁹ or 2⁹ x 5⁹ or 512 x 312,500.

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(2850)

The Lockheed glossary of DP terminology

User Friendly (u.f.) A good way to describe Lockheed's brand new, air-conditioned DP Centre in Riyadh, Saudi Arabia.

Timeslice (u.sic.) A two-year assignment with Lockheed.

Checksum (u.) A substantial configuration of digits payable monthly (with six monthly bonus) during a timeslice (u.sic.).

Access (u.a.c.) Strictly limited to experienced Programmer/Analysts.

Password (u.) Typical passwords include COBOL, DOS/VIS, CICS and POWER. Access is dependent on programmer/analyst possessing the right passwords.

Peripherals (u.cil.) Closely and functionally related to *checksum*. Currently, peripherals include free bachelor accommodation, free food and laundry, free medical and life insurance.

Mainframe (u.) IEC Series 3 System, updating now to IBM 4331.

Downtime (u.) Six downtime periods occur in every timeslice. During downtimes, Programmer/Analysts usually return to the UK, and receive free return flights.

Suite (u.all.) Usually applied to an Analyst/Programmer's bachelor accommodation (*viz* peripherals).

Address, recall (u.) The Senior Recruitment Exec (Lockheed), IAL, Personnel Consultancy, Aeradio House, Hayes Road, Southall, Middlesex. Quote numeric L294.

Conversational mode (u.) An alternative to *address, recall*. The mode may be entered by phoning 01-5745000.



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For further details contact Jack Collings on 0273-833848 during the day or 0273-400880 any evening/weekend after 6.30 p.m. Local interviews can be arranged.

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MIDLANDS

Territory Manager - Sales

West Midlands **Earnings c. £15,000 inc. car**
Our client is one of the largest British owned computer manufacturers and an acknowledged leader in its field. Their product range and marketing record throughout the U.K., Europe and the Middle East is outstanding. They now require a further TERRITORY MANAGER for their West Midlands marketing branch.

Applicants should ideally possess successful d.p. sales experience but those able to demonstrate sales potential will be considered. Excellent training facilities are provided. Applicants currently resident in the West Midlands will be given preference.

This position offers genuine prospects in a solid, professional company.
Contact: Mike Galtzell

Team Leader

Nottingham **up to £7,500 + Benefits**
An opportunity exists for a Team Leader to work on a number of challenging applications currently under development within the Research Department. The company is well known and respected and has an advanced computer installation comprising main frame and mini computers. Applicants should have ideally 5 years programming experience and be proficient with FORTRAN, COBOL or Assembler languages in an IBM environment. Familiarity with mini computer systems development would be desirable but the ability to lead and motivate teams of programmers and analysts is essential.
Contact: Bev Stevens

Team Leader - Programming

Birmingham **£6,500 + car scheme + 2 Benefits**
This mini computer systems company, a very effective subsidiary of a prominent and respected group, continues to operate successfully throughout the U.K. They now seek a PROGRAMMING TEAM LEADER for their Birmingham office. Applicants should have 3 years COBOL experience on any hardware and must either have acted in a supervisory role or have developed sufficiently to be capable of assuming this responsibility. Conditions of employment are impressive and the benefits considerably enhance the basic salary.
Contact: Mike Galtzell

JAMES BAKER ASSOCIATES, International Personnel Consultants,
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Systems Designer

Gloucestershire **£6,000-£8,000**
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Contact: Mike Galtzell

Programmers

Kenilworth **c. £6,500**
An organisation involved in the development of a new international project is seeking to recruit a number of programmers. The work will be challenging and will provide ample opportunity to develop technical skills in the on-line, communications and database fields. Applicants should have at least 1 years IBM COBOL experience and have the desire to work on the development of applications in an IMS DB/1 environment.
Contact: Bev Stevens

Gloucestershire

Our client, located in a very pleasant area, is a long established and respected division of a large and successful International Group. In order to develop systems to support the integrated administrative and distribution activities of several member companies they require:

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£6-7,000 Review 1 December
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£6,500 Review 1 December
Candidates should be educated to A level and possess 2 years COBOL programming experience preferably on ICL 1900 or 2900 equipment. Knowledge of PL/1 and FORTRAN while being an advantage is not essential. These are excellent opportunities to work on interesting projects in a purposeful atmosphere. Relocation assistance and normal large company benefits apply.
Contact: Mike Galtzell

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Our computer installation is situated to the West of Birmingham with easy access to the motorway network and City Centre.

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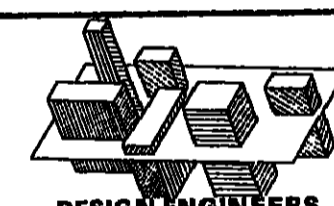
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